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No Serious Test of Prices

More Inquiry for Sheets with a Firmer Market

Pig Iron Sales for 1911 at Close to the Basis for 1910

The developments of the past week have not been calculated to stimulate demand for iron and steel products. The uncertainties in the outlook are such as the conference of several large manufacturers of steel and the assuring statement which followed it are not sufficient to remove. Buying for immediate needs is the policy of consumers all along the line, and producers are adjusting operations accordingly. It is a condition under which much of the business going will flow in the usual channels, few cases arising in which tonnage will be tempting enough to prompt a clash that would provoke retaliation.

The total of September shipments from steel mills will come closer to that for August than has been credited in some quarters, the average decrease being estimated at little over 5 per cent.

The heavy lines with which last week's rumors of a price war were chiefly concerned have been quietest, and the 1.40c. basis for plates has been maintained. The lighter products are fairly active. More inquiry has appeared for sheets, and prices are firmer than in recent weeks, manufacturers more generally quoting 2.20c. for No. 28, whereas 2.15c. has been considered the market recently. The American Sheet & Tin Plate Company is now quoting on the following basis: No. 28 gauge American Bessemer, 2.20c.; No. 10 blue annealed, 1.65c.; No. 28 galvanized, 3.20c.—all f.o.b. Pittsburgh. These prices apply to sheets for prompt shipment.

Rail orders include 10,000 tons for the Duluth, Rainy Lake & Winnipeg. In addition to the recently reported buying by the St. Paul for 1910 delivery the reinstatement by two or three roads of business for this year, previously postponed or canceled, is of interest. Export rail business continues good. Among late contracts is 10,000 tons additional for the National Railways of Mexico.

The increase in all iron and steel exports noticed for several months, and particularly in heavy lines, continues and is more marked.

Bids lately opened on fabricated work have been so close in some cases as to suggest more uniformity in minimum quotations on plain material. Contracts closed include 2200 tons of bridge work for the Chicago & Western Indiana Railroad and 2200 tons for the New Jersey Zinc Company's new construction at Palmerton, Pa. The Philadelphia & Reading will require 2500 tons for the improvements at its Port Richmond terminal.

Billets and sheet bars are weaker at $24, Pittsburgh, for Bessemer billets and $25 for Bessemer and open

Mechanical and Civil Engineers,
PITTSBURGH, PA.

hearth sheet bars. Some contracts for sheet bars have been adjusted to the above basis. A sale of 2500 tons of narrow steel skelp is reported at 1.40c., Pittsburgh.

Pig iron is sagging and the persistence of some high cost blast furnaces under the continuance of prices which mean a loss to them is surprising. More business is being done for 1911 and the important development here is that the advance recently asked over prices ruling for early delivery is fading away. Some Northern furnace companies have sold for the first quarter and first half of next year at very close to to-day's prices.

Inquiry for foundry iron for 1911 is increasing. A Western stove foundry has asked for 5000 tons; a central Ohio implement maker for 10,000 to 12,000 tons; an Eastern foundry for 8000 tons, and Western malleable foundries for round amounts. At Buffalo inquiry for the first quarter and half, chiefly from New York State points, amounts to 30,000 tons.

The recent low prices on basic iron in the East and the accumulation of stocks in the past two weeks due to held-up shipments on contracts with steel works, are bringing further curtailment of output in New Jersey and the Lehigh and Schuylkill valleys. As low as $14.50 was done on basic in eastern Pennsylvania.

At Pittsburgh the market for Bessemer and basic iron is more active. Sales of Bessemer for fourth quarter in 1000 to 2000 ton lots have been made at $15, Valley furnace, and 1500 tons of Bessemer for the first quarter of 1911 sold on the same basis.

The falling off in ore shipments on the lakes has sent more boats into ordinary. October shipments, it is estimated, will show a falling off of nearly 50 per cent. from the summer rate.

The control of the pig tin supply in this market is again in few hands, and prices have advanced in the week to 35.15c. Electrolytic copper has been sold below 12.50c., and is weaker.

Steel Trade Conditions and Prices

The flurry of last week over prices of steel products raised several questions for which satisfactory answers were not at hand. For example, it was said that Wall Street was disposed to consider the statement given out by Chairman Gary on Tuesday afternoon, September 21, as "unconvincing" and "not entirely satisfactory" because it contained no prophecy regarding the course of prices beyond the immediate future. The idea that steel manufacturers are gifted with such insight that they might become sponsors for the behavior of the market seems to be behind this skepticism. That would be a very large claim even for the present "era of good feeling."

We do not understand that the statement referred to, or the later one relative to the conference of several steel company presidents, was intended as a guaranty that prices will be any better maintained in the next three than in the past three months. The market, having gone up in the second half of 1909 on heavy forward buying, has been for several months slowly receding. If leaders in the trade, in conference over the situation, found that in view of the decline that has taken place, and considering the amount of new business coming in from week to week and the shipments still due on term contracts, prices are not likely to go down sharply in the near future, their judgment will naturally be given weight. There is less reason, it would seem, to take exception to this feature of the published statement than to the declaration that, "on the whole, the steel business should be considered satisfactory." Consumption considerably short of producing capacity and new orders steadily less than shipments have not heretofore been considered "satisfactory." Granting that the periods in which mills are weeks behind orders and when consumers pay premiums for early shipment should no more be called "normal" than times like the present, the habit of the trade is to expect the former and the reverse condition brings disappointment.

A question always raised when the market has been declining and contract buying has practically stopped is whether a sharp cut in prices would bring large contracts to the mills. The theory of the relation between the price and the use of an article of general consumption is that higher prices restrict and lower prices promote buying. Practically the theory is subject to modification. The fact that business in the iron trade comes and goes in waves has an important bearing on all situations like the present. Those who were insisting last week that the steel trade was verging on a sharp break in prices, recalled that in February, 1909, after more than 18 months of hesitant buying for immediate needs, prices were cut deeply, and in the next three months declined further, with the result that a buying movement started which broadened into the buoyant market of the final quarter of 1909. They have seen another period of halting buying in 1910 and have quickly written the same prescription.

The feature of the buying in the second half of 1909, little appreciated by many at the time, was the restocking it represented in every avenue of consumption of iron and steel. The railroads contributed very moderately to it. For two years, or from the middle of 1907, the country had been drawing on stocks—reducing to the lowest point the working margin of iron and steel of all descriptions in the hands of jobbers and consumers. In the revival in all industry last year it was found that what was a proper working stock in the beggarly consumption of 1908, had to be much increased. There was a movement all along the line—in foundries, machine shops, blacksmith shops, repair shops, in hardware and mill supply stores, and at all the jobbers' warehouses dealing with any form of metal products—to rebuild stocks to the proportions required by steadily expanding business. There came in also the feature always noticed when the country's dammed up demand of months breaks loose—the inability of the producing machinery to speed up to the new pace. Consumption seemed overwhelming because the restocking factor could not be measured. For six or seven months the inflow of new business was greater than the output of the mills. Following has come eight or nine months of a reversal of that condition. But meantime we have had nothing comparable with the two years of stock starvation that preceded the restocking movement of 1909. Consumption has been all this year, and is still, on a scale calling for the carrying of vastly greater stocks in every metal working line than were needed in 1908 and the months of 1909 preceding June. Stock reduction must go much farther before the country becomes so bare of steel as to make any large response to the stimulus of cut prices; or, on the other hand, before the mills will feel driven to make such cuts as in 1909. Capacity meanwhile has been notably increased. With railroad buying absent, it is greater than the country's

consumption, or its probable consumption in 1911. Buyers will naturally want more light on the ultimate effect of this condition on prices. Political and economic questions of importance are up and will not be settled for months. They have much to do with iron and steel consumption and values. Steel prices have declined several dollars a ton since the beginning of the year, representing more of a readjustment than in many other industries. The case is not, as in 1909, one of waiting on the steel manufacturers to do what all other lines have done.

The conditions named and those which have been given greater emphasis by repeated comment suggest that the iron trade lacks much of presenting the parallel to early 1999 that has been so readily assumed.

Public Unrest and the New Doctrines

It is generally recognized that a feeling of extreme unrest pervades the people. To define it, to state precisely what it is directed against, is impossible, for we are considering what is in the minds of individuals and that presents a wide variety. One thought is common to all and that is that the cost of living is too high. It is the general conviction that something should be done to reduce it. One of our premises to what is to follow is, therefore, that the people want the cost of living to be reduced.

The other premise is that a certain set of propaganda is being preached throughout the country, Colonel Roosevelt being the chief exponent, but having much company. The propaganda comprises chiefly: (1) A higher standard of business morality; (2) a crime done through the medium of a corporation is personal; (3) the "new nationalism." It is unnecessary to expatiate upon the meaning of these terms, but since the "new nationalism" as a term was born so recently as the last day of August, in Colonel Roosevelt's Osawatomie speech, it may not be inappropriate to repeat his definition: "The new nationalism puts the national need before personal or sectional advantage and is impatient of the impotence from the over-division of government powers, the impotence which makes it possible for local selfishness, or for legal cunning, hired by wealthy special interests, to bring national activities to a deadlock."

One may have never so good a thought, and may express it never so clearly, yet the impression created in the mind of the hearer may be tinctured, may even be permeated, with a spirit which is entirely foreign to that thought as it lay in the mind of him who gave it utterance. Were practical psychology centuries old, instead of in its infancy, it would still be impossible for any one so to define, explain and guard his thought as that the recipient should have only the giver's conception, neither more nor less. These propaganda fall upon fertile soil, and are so broad and so susceptible of application that it is unavoidable that some of their fruits shall be bad fruits, and that some of their applications shall be improper.

We started with two premises: the desire of the people for a reduction in the cost of living and the propaganda being preached. What more natural than that the people should couple the one with the other? That there are relations no one can deny, but we are dealing with what is in the minds of many people, probably, indeed, more than half of the 90,000,000 people in this country. Beyond doubt, the greater number of these people have in mind a closer connection than really exists between what these propaganda are directed against and the high cost of living. That it would be well for the cost of living to be reduced all will grant. That what is good in the propaganda should be carried out will be granted with equal freedom. For either, action is necessary, and action can only be in detail. The Government cannot put R. G. Dun & Co. under bonds to reduce their index number; it can come down only by the owners of the individual commodities whose prices make up that index number accepting less money for the commodities. Business morality, personal responsibility for corporate acts, love for national rather than special advantage, cannot come through one sweeping act, but must come to individuals. Action leading to direct results must be action in detail. In the nature of the case, then, many of the actions incited by the preaching may be ill-timed or wrong, although the preaching in itself is wholly good. The fault will lie in the application, largely because so many of the 90,000,000 people in the country will take it upon themselves to apply the preachings farther than the nature of their knowledge and experience warrants them in doing.

Apparently the concept in the minds of millions of people is that the high cost of living is due largely to the "trusts," and that Government regulation of the trusts and the railroads promises the most important remedy now conceivable for the high cost of living. The propaganda as to regulation of business deal exclusively, so far as we are able to observe, with such regulation as can be practiced by the Federal Government, and hence applies only to interstate commerce, and, therefore, business interests engaged in it. The regulation in mind, then, is of the great or interstate commerce trusts, a conception which it is important to emphasize, and of the railroads.

The greatest of all "trusts" in point of capitalization and prestige is the United States Steel Corporation. Quantitatively, its annual gross receipts amount to about $5 per capita for the 90,000,000 people in this country. Include its competitors, and include also the ore and blast furnace interests serving the foundry trade, and the total annual receipts of the entire iron and steel industry as thus defined do not amount to $10 per capita. Regulation does not touch the cost of living except by reduction. How would the cost of living be affected by a reduction amounting to a fraction—necessarily a small fraction—of $10 per annum?

So much for a quantitative concept of great trusts. The burden of the railroads, which are already being regulated, is easily assessed. The total passenger income of the railroads in the last fiscal year was $6 per capita, and the total freight income $19, a total of $25 per capita. A reduction of 12 per cent.—$3 per capita—would wipe out every dollar of dividends paid, other conditions being unchanged, while a like increase would permit the doubling of all dividends. What is $3 in the annual per capita cost of living?

These items are simply nothing at all to the individual. Let us take a glimpse of what is important to him. Merely to live decently involves, using rough but we believe sufficiently accurate estimates, an annual consumption per capita of $15 to $25 worth of milk, eggs of about the same cost and butter of half as

great cost—total expenditures, on the basis of present values in centers of population, of, say, $40 to $60 per capita per annum, for only three of the many items which go to make up the cost of living.

Now there are certainly few who upon investigation would deny that there is more room for a reduction, by this means or that means, in the cost of these and many other articles which are really important in making up the cost of living than there is in all the subjects which in the popular mind are associated with the propaganda which are being so lustily preached. With no part of the propaganda, properly understood, do we here take issue; we are merely illustrating the distorted view which millions of people are likely to take of them.

Following Instructions in Installing Equipment

A manufacturer of a standard metal working machine, which may be classed as special, has adopted a system of requiring customers to bear the expense of putting machines in working order, if the fault proves to be theirs and not the builder's. This subject is an old one. Machinery men are constantly annoyed by complaints of customers, and many times are put to large expense, which would have been avoided had the users thoroughly followed instructions.

In the case in question the machines are by no means complicated, and any ordinarily intelligent master mechanic should be able to set them up and start them. The company sends a copy of carefully prepared instructions in the box with the machine and a duplicate by mail. Nevertheless, extraordinary results are occasionally obtained. A common source of trouble is in the speeds. For example, the builder sent out a machine, and complaint came that it was valueless; that it broke down almost immediately after being started up; that parts must be replaced, and unless these conditions were complied with immediately the machine would be shipped back to the factory. The manager wrote back, asking the trouble in detail. The answer was that the machine was "no good." He wrote again, insisting upon information, and, getting none, stated that a man would be sent to the customer's works if the latter would bear the expense should he prove to be in the wrong. This was agreed to. An expert from the factory found that a large and, from its nature, somewhat frail reciprocating part, designed to operate at 60 rev. per min., had been belted at 180, and breakage of a serious nature followed inevitably. Other almost equally gross examples of disregard of instructions were discovered. The machine was put in shape and operated so well that it was duplicated several times over, almost immediately. The customer acknowledged the fault and paid the bill, amounting to something over $50. In several other such cases the cost has been apportioned in the same way.

Many machinery houses take it for granted that the buyer will not do the work of installation satisfactorily and send a man with the machine to set it up. The cost is considerable, but, of course, it enters into the price of the machine and the customer pays it. Where machines are expensive, the additional price is not conspicuous. With low-priced equipment a manufacturer cannot afford to send a man, nor would the customer be willing to pay the additional price. Therefore, it must be a case of printed instructions. Probably no one will dispute the justice of apportioning the cost of remedying such troubles according to the degree of blame as between the manufacturer and the customer.

Highest Production of Wire Rods Reached in 1909

The statistics of the production of iron and steel wire rods in the United States in 1909 have been collected by the American Iron and Steel Association. The total, estimating the production of two plants, is found to be 2,335,685 gross tons, or considerably the largest 12 months' output on record. It compares with 1,816,949 tons in 1908, an increase of 518,736 tons, or 28.5 per cent. In 1909 no iron wire rods were reported, but in 1908 the steel wire rods rolled amounted to 1,816,440 tons and the iron rods to 509 tons. Small quantities of steel copper clad wire rods are included in the totals for the two years. The following table gives the production since 1907 by groups of States:

	1907.	1908.	1909.
Massachusetts, Connecticut, Rhode Island, New York and New Jersey	233,687	200,113	280,101
Pennsylvania, Kentucky, Georgia, Alabama and Ohio	1,176,278	1,047,243	1,388,237
Indiana, Illinois and Colorado	607,618	569,593	667,347
Totals	2,017,583	1,816,949	2,335,685

Wire rods were rolled in 1900 by 32 works in 11 States as follows: Massachusetts, 1; Rhode Island, 1; New York, 3; New Jersey, 2; Pennsylvania, 11; Kentucky, 1; Georgia, 1; Ohio, 6; Indiana, 2; Illinois, 3, and Colorado, 1. Connecticut and Alabama, which have wire rod mills, did not roll wire rods in 1909 or in 1908, but in 1907 both were producers. In 1908 there were 29 active works in the same States. In 1909 Pennsylvania rolled over 36.9 per cent. of the total for the whole country, as compared with over 32.4 per cent. in 1908. The following table gives the production of iron and steel wire rods from 1889 to 1909 in gross tons:

	Tons.		Tons.		Tons.
1889	363,851	1896	623,986	1903	1,503,455
1890	457,099	1897	970,736	1904	1,699,029
1891	536,607	1898	1,071,683	1905	1,808,688
1892	627,829	1899	1,036,398	1906	1,871,614
1893	537,272	1900	846,291	1907	2,017,583
1894	673,402	1901	1,265,934	1908	1,816,949
1895	791,130	1902	1,574,293	1909	2,335,685

At the close of 1909 two wire rod mills were in course of erection—one at Woodlawn, near Aliquippa, Pa., by the Jones & Laughlin Steel Company, and one at Johnstown, Pa., by the Cambria Steel Company. At the same time the Southern Iron & Steel Company was removing its rod mill from Ensley, Ala., to Alabama City, Ala. Since January the American Steel & Wire Company has begun the erection of a large rod and wire plant at Wylam, near Ensley.

The Glacier Metal Company, Richmond, Va., has placed on the market a new ribbonized plastic metallic packing for steam, air, gas, water, ammonia, &c., which is described as follows: This packing is manufactured from the finest alloy of white metal, which can satisfactorily be made into fine shreds or ribbons; is very pliable, will not score the rods, shows no corrosion when it comes in contact with acids, and cannot rot as many packages do which are made from fiber. No sizes are required to be carried in stock, as a rope can easily be made with the hands of the size required for packing the rods.

The iron ore explorations on the Wisconsin end of the Menominee range, referred to in these columns recently, are not being carried on by the Wellston Steel & Iron Company, as stated, but by the Spring Valley Mining Company; nor is the former company interested in the work.

The Iron and Metal Markets

A Comparison of Prices

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Sept.28. 1910.	Sept.21. 1910.	Aug.24. 1910.	Sept.29. 1909.
PIG IRON, Per Gross Ton:				
Foundry No. 2, standard, Philadelphia	$16.00	$16.00	$16.00	$18.50
Foundry No. 2, Southern, Cincinnati	14.25	14.25	14.25	17.75
Foundry No. 2, local, Chicago	*16.25*	16.25	16.50	19.00
Basic, delivered, eastern Pa.	15.00	15.00	15.00	18.50
Basic, Valley furnace	*13.50*	13.50	14.00	16.50
Bessemer, Pittsburgh	15.90	15.90	15.90	18.40
Gray forge, Pittsburgh	14.15	14.15	14.15	16.90
Lake Superior charcoal, Chicago	*18.25*	18.25	18.50	19.50
BILLETS, &c., Per Gross Ton:				
Bessemer billets, Pittsburgh	*24.00*	24.50	24.50	25.00
Forging billets, Pittsburgh	*29.00*	29.00	29.50	29.00
Open hearth billets, Philadelphia	*26.00*	26.50	27.50	27.60
Wire rods, Pittsburgh	28.00	28.00	28.00	31.50
Steel rails, heavy, at mill	28.00	28.00	28.00	28.00
OLD MATERIAL, Per Gross Ton:				
Steel rails, melting, Chicago	13.50	13.50	13.50	17.25
Steel rails, melting, Philadelphia	**14.00**	14.00	13.75	17.75
Iron rails, Chicago	16.00	16.00	16.00	20.50
Iron rails, Philadelphia	18.00	18.00	18.00	21.00
Car wheels, Chicago	*14.00*	14.00	14.50	18.50
Car wheels, Philadelphia	13.75	13.75	13.75	17.00
Heavy steel scrap, Pittsburgh	14.25	14.50	14.25	17.50
Heavy steel scrap, Chicago	12.25	12.25	12.25	16.75
Heavy steel scrap, Philadelphia	**14.00**	14.00	13.75	17.75
FINISHED IRON AND STEEL, Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined iron bars, Philadelphia	1.40	1.40	1.40	1.57
Common iron bars, Chicago	1.37½	1.37½	1.37½	1.55
Common iron bars, Pittsburgh	1.45	1.45	1.45	1.55
Steel bars, tidewater, New York	1.56	1.56	1.56	1.56
Steel bars, Pittsburgh	1.40	1.40	1.40	1.40
Tank plates, tidewater, New York	1.56	1.56	1.56	1.66
Tank plates, Pittsburgh	1.40	1.40	1.40	1.50
Beams, tidewater, New York	1.56	1.56	1.56	1.66
Beams, Pittsburgh	1.40	1.40	1.40	1.50
Angles, tidewater, New York	1.56	1.56	1.56	1.66
Angles, Pittsburgh	1.40	1.40	1.40	1.50
Skelp, grooved steel, Pittsburgh	*1.40*	1.40	1.45	1.40
Skelp, sheared steel, Pittsburgh	*1.50*	1.50	1.55	1.50
SHEETS, NAILS AND WIRE, Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, Pittsburgh	*2.15*	2.15	2.20	2.30
Wire nails, Pittsburgh*	1.70	1.70	1.70	1.80
Cut nails, Pittsburgh	1.65	1.65	1.65	1.75
Barb wire, galv., Pittsburgh*	2.00	2.00	2.00	2.10
METALS, Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake copper, New York	*12.75*	12.75	13.00	13.50
Electrolytic copper, New York	*12.50*	12.50	12.62½	13.00
Spelter, New York	**5.60**	5.60	5.35	5.85
Spelter, St. Louis	**5.45**	5.45	5.20	5.70
Lead, New York	4.40	4.40	4.40	4.38
Lead, St. Louis	*4.27½*	4.30	4.30	4.25
Tin, New York	**35.12½**	34.55	34.50	30.75
Antimony, Hallett, New York	7.87½	7.87½	7.87½	8.30
Nickel, New York	45.00	45.00	45.00	45.00
Tin plate, 100 lb., New York	$3.84	$3.84	$3.84	$3.74

*These prices are for largest lots to jobbers.

Prices of Finished Iron and Steel f.o.b. Pittsburgh

Freight rates from Pittsburgh in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Paul, 32c.; St. Louis, 22½c.; New Orleans, 30c.; Birmingham, Ala., 45c. Rates to the Pacific Coast are 80c. on plates, structural shapes and sheets, No. 11 and heavier; 85c. on sheets, Nos. 12 to 16; 95c. on sheets, No. 16 and lighter; 65c. on wrought pipe and boiler tubes.

Structural Material.—I-beams and channels, 3 to 15 in., inclusive, 1.40c. to 1.45c. net; I-beams over 15 in., 1.50c. to 1.55c. net; H-beams over 8 in., 1.55c. to 1.60c.; angles, 3 to 6 in., inclusive, ¼ in. and up, 1.40c. to 1.45c. net; angles over 6 in., 1.50c. to 1.55c. net; angles, 3 in. on one or both legs, less than ¼ in. thick, 1.45c., plus full extras as per steel bar card, effective September 1, 1909; tees, 3 in. and up, 1.40c. to 1.45c. net; zees, 3 in. and up, 1.40c. to 1.45c. net; angles, channels and tees, under 3 in., 1.45c., base, plus full extras as per steel bar card of September 1, 1909; deck beams and bulb angles, 1.70c. to 1.75c. net; hand rail tees, 2.50c.; checkered and corrugated plates, 2.50c. net.

Plates.—Tank plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.40c. to 1.45c., base. Following are stipulations prescribed by manufacturers, with extras to be added to base price (per pound) of plates:

Rectangular plates, tank steel or conforming to manufacturers' standard specifications for structural steel dated February 6, 1903, or equivalent, ¼-in. thick and over on thinnest edge, 100 in. wide and under, down to but not including 6 in. wide, are base.

Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot are considered ¼-in. plates. Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. take the price of 3-16-in.

Allowable overweight, whether plates are ordered to gauge or weight, to be governed by the standard specifications of the Association of American Steel Manufacturers.

Gauges under ¼-in. to and including 3-16-in. on thinnest edge	$0.10
Gauges under 3-16-in. to and including No. 8	.15
Gauges under No. 8 to and including No. 9	.25
Gauges under No. 9 to and including No. 10	.30
Gauges under No. 10 to and including No. 12	.40
Sketches (including all straight taper plates), 3 ft. and over in length	.10
Complete circles, 3 ft. diameter and over	.20
Boiler and flange steel	.10
"A. B. M. A." and ordinary firebox steel	.20
Still bottom steel	.30
Marine steel	.40
Locomotive firebox steel	.50
Widths over 100 in. up to 110 in., inclusive	.05
Widths over 110 in. up to 115 in., inclusive	.10
Widths over 115 in. up to 120 in., inclusive	.15
Widths over 120 in. up to 125 in., inclusive	.25
Widths over 125 in. up to 130 in., inclusive	.50
Widths over 130 in.	1.00
Cutting to lengths or diameters under 3 ft. to 2 ft., inclusive	.25
Cutting to lengths or diameters under 2 ft. to 1 ft., inclusive	.50
Cutting to lengths or diameters under 1 ft.	1.55

No charge for cutting rectangular plates to lengths 3 ft. and over.

TERMS.—Net cash 30 days.

Sheets.—Makers' prices for mill shipments on sheets in carload and larger lots, on which jobbers charge the usual discounts for small lots from store, are as follows: Blue annealed sheets, Nos. 3 to 8, 1.55c. to 1.60c.; Nos. 9 and 10, 1.60c. to 1.65c.; Nos. 11 and 12, 1.65c. to 1.70c.; Nos. 13 and 14, 1.70c. to 1.75c.; Nos. 15 and 16, 1.80c. to 1.85c. One pass, cold rolled, box annealed sheets: Nos. 15 and 16, 1.90c. to 1.95c.; Nos. 17 and 21, 1.95c. to 2c.; Nos. 22 and 24, 2c. to 2.05c.; Nos. 25 and 26, 2.05c. to 2.10c.; No. 27, 2.10c. to 2.15c.; No. 28, 2.15c. to 2.20c.; No. 29, 2.20c. to 2.25c.; No. 30, 2.30c. to 2.35c. Three pass, cold rolled sheets, box annealed, are as follows: Nos. 15 and 16, 2c. to 2.05c.; Nos. 17 to 21, 2.05c. to 2.10c.; Nos. 22 to 24, 2.10c. to 2.15c.; Nos. 25 and 26, 2.15c. to 2.20c.; No. 27, 2.20c. to 2.25c.; No. 28, 2.25c. to 2.30c. Galvanized sheets, Nos. 13 and 14, 2.45c.; Nos. 15 and 16, 2.50c.; Nos. 17 to 21, 2.65c.; Nos. 22 to 24, 2.85c.; Nos. 25 and 26, 2.95c. to 3c.; No. 27, 3.05c. to 3.10c.; No. 28, 3.25c. to 3.30c.; No. 29, 3.40c. to 3.45c.; No. 30, 3.60c. to 3.65c. Painted roofing sheets, No. 28, $1.55 to $1.60 per square. Galvanized sheets, No. 28, $2.80 to $2.85 per square, for 2½-in. corrugations. All above prices are f.o.b. Pittsburgh, terms 30 days net, or 2 per cent. cash discount 10 days from date of invoice.

Wrought Pipe.—The following are the discounts on the Pittsburgh basing card on carloads of wrought pipe now in effect:

	Steel. Black.	Steel. Galv.	Iron. Black.	Iron. Galv.
⅛ and ¼ in.	70	54	66	..
⅜ in.	71	57	67	53
½ in.	74	62	70	58
¾ to 6 in.	78	68	74	64
7 to 12 in.	72	57	68	53
Plugged and Reamed.				
1 to 4 in.	76	66	72	62
Extra Strong, Plain Ends.				
⅛ to ⅜ in.	63	51	59	47
½ to 4 in.	70	58	66	54
4½ to 8 in.	66	54	62	50
9, 10, 11 and 12 in.	54	42	..	..
Double Extra Strong, Plain Ends.				
⅛ to 8 in.	59	48	55	44

The above steel pipe discounts are for "card weight," subject to the usual variation of 5 per cent.

Boiler Tubes.—Discounts on lap welded steel and charcoal iron boiler tubes to jobbers in carloads are as follows:

	Steel.	Iron.
1 to 1½ in.	49	43
1¾ to 2¼ in.	61	43
2½ in.	63	48
2¾ to 5 in.	69	55
6 to 13 in.	61	43

2½ in. and smaller, over 18 ft., 10 per cent. net extra.
2¾ in. and larger, over 22 ft., 10 per cent. net extra.

Less than carloads to destinations east of the Mississippi River will be sold at delivered discounts for carloads lowered by two points, for lengths 22 ft. and under; longer lengths, f.o.b. Pittsburgh.

Wire Rods.—Bessemer, open hearth and chain rods, $28.

Steel Rivets.—Structural rivets, ¾-in. and larger, 1.90c., base; cone head boiler rivets, ¾-in. and larger, 2c., base; ⅝-in. and 11-16-in. take an advance of 15c., and ½-in. and 9-16-in. take an advance of 50c.; in lengths shorter than 1-in. also take an advance of 50c. Terms are 30 days, net cash, f.o.b. mill.

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Pittsburgh

PARK BUILDING, September 28, 1910.—(*By Telegraph.*)

Pig Iron.—A more active inquiry has developed for Bessemer iron and some fair sized sales have been made. One sale of about 3000 tons is reported at a price somewhat below $15, Valley furnace, but it is stated the transaction was really a trade, the buyer giving other material in exchange. Actual sales of Bessemer iron have been made of 2000 tons for October, November and December; 1000 tons for October, November and December, and 1500 tons for January, February and March, all at $15, Valley furnace, and 1500 tons for November and December at $15.25, Valley furnace, this iron to be used in making ingot molds, and a special analysis was involved. New inquiry for basic and foundry iron is rather quiet, but we note two sales of basic iron, about 2000 tons, at $13.50, Valley furnace, and a sale of 600 tons of No. 2 foundry for October, November and December at $14, Valley furnace. We quote Bessemer iron at $15; basic, $13.50; malleable Bessemer, $14 to $14.25; No. 2 foundry, $13.75 to $14, and gray forge at $13.25, all at Valley furnace, the freight rate for delivery in Pittsburgh being 90c. a ton.

Steel.—The market on open hearth billets and sheet and tin bars is being disturbed to some extent by offerings from several small open hearth plants at lower prices than the larger steel mills have named. Several lots of open hearth sheet and tin bars have been sold at a price equal to slightly less than $25 delivered, Pittsburgh. We also note that several consumers who buy sheet and tin bars on a sliding scale have had their contracts adjusted to the basis of $25, Pittsburgh, for last quarter. We quote Bessemer 4 x 4 in. billets, $24 to $24.50; open hearth billets, 4 x 4 in., $24.50 to $25; Bessemer and open hearth sheet and tin bars, $25; forging billets, $29 to $29.50, all f.o.b. cars Pittsburgh, Youngstown or Wheeling district.

Skelp.—We note a sale of 2500 tons of narrow width grooved steel skelp at 1.40c., Pittsburgh.

(*By Mail.*)

A disposition is now shown by buyers to place contracts, especially for pig iron, sheets and a few other finished products. The conference of the steel interests in New York recently and the announcement from the Steel Corporation that no wide open cut in steel prices is contemplated have done much to quiet the fear of a demoralization in prices. It is the feeling of the large producing interests that prices on steel commodities are on a fair basis, and nothing would be gained by making a horizontal cut. There will be a material increase in capacity for rolling sheet and tin bars in the Pittsburgh district in the near future. The mills being erected by the Jones & Laughlin Steel Company at Aliquippa will likely be ready to operate about November 15. The Republic Iron & Steel Company expects to have its new open hearth plant in the Youngstown district in operation early in 1911; it will have eight 60-ton furnaces, blooming and sheet and tin bar mills and will have a capacity of upward of 1000 tons of steel per day. No changes are noted in prices on finished iron and steel with the exception of sheets, which have been a little firmer in the last few days, and specifications are reported a little better. The scrap and coke trades continue to drag a good deal with prices ruling about the same. A more hopeful feeling exists.

Ferromanganese.—Reports are that two sales of about 500 tons each of foreign ferromanganese have been made for delivery over the remainder of the year at about $39.25, Baltimore, and also a sale of about 500 tons for deliveries running into first half of next year, at the same price. We quote 80 per cent. foreign at $39.25 to $39.50, Baltimore, the rate to Pittsburgh being $1.95 a ton.

Ferrosilicon.—No new inquiries of moment are in the market, but some small lots are being sold for prompt shipment. We quote 50 per cent. at $56.50, Pittsburgh, for prompt shipment, and $55.50 for forward delivery. We quote 10 per cent. blast furnace silicon at $23; 11 per cent., $24; 12 per cent, $25, f.o.b. cars Jisco and Ashland furnaces.

Skelp.—The scarcity in iron plates that has existed for some time, due to the shutdown of a number of puddling mills on account of failure to settle the Sons of Vulcan boiling scale, will probably soon be relieved, as an agreement on this scale was reached last week. One of the independent pipe mills has recently placed contracts with local mills for about 6000 tons of grooved and sheared steel skelp and about 2000 tons of grooved iron skelp, deliveries running over the remainder of this year. We quote grooved steel skelp, 1.40c. to 1.45c.; sheared steel skelp, 1.50c. to 1.55c.; grooved iron skelp, 1.75c. to 1.80c., and sheared iron skelp, 1.85c. to 1.90c., all f.o.b. Pittsburgh, usual terms.

Rods.—Some inquiry is coming out, but mostly for small lots for prompt shipment. Large consumers are pretty well covered by contracts, on which they are specifying at a fairly liberal rate. The new rod mill of the Jones & Laughlin Steel Company is running very successfully. We quote Bessemer, open hearth and chain rods at $28, Pittsburgh, but on a firm offer for Bessemer rods this price might be shaded.

Muck Bar.—The puddling plants of A. M. Byers & Co., at Girard, and the Youngstown Sheet & Tube Company, at East Youngstown, started up this week, having been idle since July 1. We quote best grades of muck bar, rolled from all pig iron, at $29 to $29.50, Pittsburgh.

Steel Rails.—The demand continues quiet, only small lots being placed with the local mill. New buying of light rails from the lumber and coal mining interests continues quite active, and the Carnegie Steel Company has a good deal of tonnage booked for delivery over the remainder of the year. We quote standard sections of Bessemer rails at $28, mill, and light rails as follows: 8 to 10 lb., $32; 12 to 14 lb., $29; 16, 20 and 25 lb., $28; 30 and 35 lb., $27.75, and 40 and 45 lb., $27, Pittsburgh. We quote steel axles at 1.75c. to 1.80c., and splice bars at 1.50c., at mill.

Structural Material.—The Jones & Laughlin Steel Company has taken about 1000 tons of steel for the new machine shops and foundry of the Treadwell Engineering Company, Easton, Pa., also a refinery building for the Spencer-Kellogg Company at Edgewater, N. J., 200 tons, and the steel for a freight station for the New York Central Railroad at Utica, N. Y., about 150 tons. The American Bridge Company has taken some bridge work for one of the lines of the Erie Railroad in New York State, about 1000 tons. New inquiries in the past week have been better, but there is still much complaint over the low prices that are being named for fabricated work. We quote beams and channels up to 15-in. at 1.40c., Pittsburgh, in large lots, and 1.45c. in small lots.

Plates.—There is a complete dearth of car orders and, in fact, very little work is being placed in which plates are used. All the plate mills are badly in need of orders and are being operated at greatly lessened capacity. We quote ¼-in. and heavier plates in the wide sizes at 1.40c., Pittsburgh, but for delivery at certain competitive points, and for desirable tonnage, a slightly lower price is sometimes named. On the narrower sizes of plates 1.35c., Pittsburgh, is being done.

Sheets.—Specifications on contracts have been better and prices are a shade firmer. It is not believed that the very low price named on sheets for some time by part of the mills has brought out the desired tonnage. One leading sheet mill, under date of September 26, advanced its prices on open hearth steel sheets, one-pass cold rolled, box annealed to 2.20c., and announces that it will take contracts for delivery up to May 1, 1911, at above price. It also announces that all outstanding quotations must be accepted or withdrawn not later than September 30. It is stated that one or two other mills have recently withdrawn some low quotations that were not accepted. Box annealed, one-pass cold rolled black sheets, No. 28 gauge, are on the basis of about 2.15c. to 2.20c., and No. 28 galvanized at about 3.20c. to 3.25c., at maker's mill, in carload and larger lots. Painted and galvanized corrugated sheets are also being materially shaded. Present prices in effect on black, galvanized and roofing sheets will be found on a previous page.

Tin Plate.—Conditions in the tin plate trade are fairly satisfactory, but specifications against contracts are not coming in as freely as they did some time ago. The McKeesport Tin Plate Company will add two more hot mills to its plant at McKeesport, Pa., giving it a total of 22 hot mills. We quote 100-lb. cokes at $3.60 per base box, f.o.b. Pittsburgh.

Bars.—Encouraging reports are received from the mills as to the way specifications against contracts for steel bars are coming in and which are reported to be quite as heavy as anticipated. New buying is rather light, as nearly all consumers covered some time ago and when one needs some bars he is content to order only what he will require in the near future. Conditions in the bar iron trade are quiet, and specifications are not coming in very freely, especially from the railroads. We continue to quote steel bars at 1.40c. and common iron bars at 1.45c., Pittsburgh.

Spelter.—The spelter market has quieted down, and as a result prices are easier in tone. We continue to quote prime grades of Western spelter at 5.40c., East St. Louis, equal to 5.52½c., Pittsburgh, but on a firm offer and for large tonnage this price might be slightly shaded.

Hoops and Bands.—Specifications against contracts have been coming in more freely, and September shipments will show an increase over August. New orders are usually for small lots to cover current needs, but the increase in specifications is taken to mean that dealers' stocks are lower than for some time. Prices are quite firm and we quote

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hoops at 1.50c. in large lots and 1.55c. in small lots; bands, 1.40c. in carload and larger lots and 1.45c. in small lots, the latter subject to extras as noted in the steel bar card, dated September 1, last year.

Spikes.—Reports are that prices are being pretty badly cut and there is more or less demoralization. The demand for railroad spikes has been very dull for some time, but a fair amount of new business is being placed in small railroad and boat spikes. We quote standard sizes of railroad spikes at 1.50c. to 1.55c. for Western shipment and 1.55c. to 1.60c. for local trade. We quote small railroad and boat spikes at 1.60c. to 1.65c., base, in carload and larger lots. We note that on some orders recently placed on small railroad spikes a local maker has made a price of 1.55c., Pittsburgh, but several other makers refuse to meet it.

Rivets.—There is a fair amount of new business, but mostly in small lots. Several local makers of rivets state that specifications against contracts have been coming in a little better this month than during August. Regular prices of 1.90c. on structural rivets and 2c. on boiler rivets continue to be shaded from 10c. to 15c. per 100 lb., depending on the order.

Shafting.—The market is quieter now than probably at any previous time this year. Specifications from implement makers are coming in at only a fairly satisfactory rate, while from automobile makers very little new business is being received. All of the shafting makers are pretty well caught up on back contracts and there is no difficulty in obtaining prompt shipments. Regular discounts on shafting are 55 per cent. off in carload and larger lots, and 50 per cent. off in small lots, delivered in base territory. On desirable contracts and for large lots 55 and 5 per cent. is being named.

Wire Products.—The demand is almost entirely for small lots to meet current needs, both jobbers and retailers not desiring to anticipate. It is stated that stocks of wire nails and wire are lower now than at any previous time this year; in some cases jobbers in placing orders specify prompt shipments. We quote galvanized barb wire at $2; painted, $1.70; annealed fence wire, $1.50; galvanized, $1.80; wire nails, $1.70, and cut nails, $1.65, in carload and larger lots, all f.o.b. Pittsburgh, freight to destination being added.

Merchant Pipe.—The present condition of the merchant pipe trade is reported by the mills to be quite satisfactory, in view of the quiet conditions ruling in other lines of finished products. The new demand has been fairly active and shows an increase over last month. The Imperial Window Glass Company has placed an order with a local mill for 10 miles of 6-in. line pipe, and a local pipe concern has received a contract for 50 miles of 3 and 4 in. iron line pipe for immediate delivery. On the larger sizes the mills are pretty well filled for several months. It is stated that regular discounts on both iron and steel pipe, printed on a previous page, are being well maintained. Prices on iron pipe are particularly strong, due to high prices and scarcity of iron plates.

Boiler Tubes.—The trade in both locomotive and merchant tubes is very unsatisfactory, and has been for some time. There is little or no new demand for merchant tubes, while for railroad tubes only small orders are being placed. The market on tubes is absolutely open, each mill making its own prices.

Coke.—A local pig iron interest has bought in the past week upward of 20,000 tons of furnace coke for delivery to its various furnaces for October shipment at about $1.60 per net ton at oven. Several makers of standard furnace coke have refused to meet this price and are holding their coke at $1.75. No large inquiries for foundry coke are in the market, but prices are fairly strong. We continue to quote standard makes of furnace coke at $1.60 to $1.65 per net ton at oven for prompt shipment and $1.70 to $1.75 on contracts for delivery over balance of this year. Prompt 72-hour foundry coke is held at about $2.10 to $2.25 to consumers and for the remainder of the year at $2.25 to $2.50 per net ton at oven. The usual allowance of 15c. per ton on these prices is made to dealers. The output of coke in the Connellsville region last week was 343,630 tons, an increase of about 2000 tons over the previous week.

Iron and Steel Scrap.—There is slightly more activity, consumers being more disposed to take in material when the prices are right than they were some time ago. Bundled sheet scrap, heavy steel scrap, borings and turnings are the active items in the scrap list and a fair amount of tonnage in these lines is moving. It is not believed, however, that prices can show any material advance until the pig iron market improves. Basic iron at close to $14, Pittsburgh, will serve to keep down, more or less, prices on scrap for open hearth purposes. A new user of scrap in the Pittsburgh district is the Standard Steel Car Company, whose open hearth plant at Butler, Pa., started to make steel last week. Dealers quote about as follows, per gross ton, for delivery in the Pittsburgh district or elsewhere, as noted:

Heavy steel scrap, Steubenville, Follansbee, Sharon, Monessen and Pittsburgh delivery	$14.25 to $14.50
No. 1 foundry cast	14.00 to 14.25
No. 2 foundry cast	13.00 to 13.25
Bundled sheet scrap, at point of shipment	10.50 to 10.75
Rerolling rails, Newark and Cambridge, Ohio, and Cumberland, Md.	15.75 to 16.00
No. 1 railroad malleable scrap	14.00 to 14.25
Grate bars	12.00 to 12.25
Low phosphorus melting stock	18.00 to 18.50
Iron car axles	24.50 to 25.00
Steel car axles	21.50 to 22.00
Locomotive axles	25.00 to 25.50
No. 1 busheling scrap	12.75 to 13.00
No. 2 busheling scrap	8.50 to 8.75
Old car wheels	14.00 to 14.25
Sheet bar crop ends	16.00 to 16.25
Cast iron borings	8.25 to 8.50
Machine shop turnings	9.50 to 9.75

Chicago

FISHER BUILDING, September 28, 1910.—(*By Telegraph.*)

There is a general feeling of satisfaction among business men that the corn crop is beyond danger of any serious frost damage. This places the West in a very strong position financially and insures a good foundation for business. No immediate results have appeared thus far in the way of improvement in the iron and steel market. The rumors of lower prices which were given such wide publicity in the daily press last week have encouraged many buyers to hold off in the hope that there might be some foundation for these reports. The market has held very firmly in view of these rumors and there are no indications of weakness or lower prices in any important line of finished products. The leading interest and all the larger independent mills are holding their quotations firm at 1.40c., Pittsburgh, on structural material and plates. For some time smaller mills have been selling plates on the basis of 1.35c., and in some cases such mills have sold light sections of structural shapes at this price. Fabricators have been shading prices on small jobs, but quotations are firm on any large contracts for structural work. The fabricating interests took contracts in Chicago last week for work requiring about 6000 tons of steel, and other contracts closed bring the total for Western territory up to nearly 10,000 tons, a very satisfactory improvement over the record of recent weeks, with important new business pending this week. A new rail order for 10,000 tons was closed for a road under construction from Duluth to Winnipeg, but it is understood that the Western railroad systems will not place their heavy orders for 1911 until late in the year. The railroad policy of restricting purchases is accumulating an enormous amount of business which must come out eventually, and the fact that this business is steadily banking up is giving tone to the market even though current business is light. The scrap market is weak and dealers are discouraged.

Pig Iron.—The largest interests in this market report only a nominal volume of sales of pig iron the past week, consisting usually of small filling in orders for the remainder of the year. This applies to both Northern and Southern iron. Practically all the buyers in this territory have covered their requirements to the end of the year at their present rate of consumption and are not willing to pay any higher prices for first quarter or first half. The railroad policy has had an appreciable influence in decreasing the melt. An active demand from the railroads for malleable and gray iron castings would bring many foundries into the market for additional lots of prompt or last quarter iron, but otherwise the furnace interests expect a dragging market until something occurs to start a buying movement for next year. A few of the Southern furnaces have taken orders from old customers for the first quarter at $11.50, Birmingham, but with these exceptions are discouraging inquiries for next year and some flatly refuse to make quotations. The Northern iron in this territory is practically all sold for the last quarter and some business has been done for first quarter at a slight advance in price, but the local furnaces are reluctant to take any deferred business at present values. The most persistent inquiries come from malleable foundries. These foundries sell a large part of their product on yearly contracts which run from July to June, and they have bought very little iron to cover the second half of their fiscal year. Aside from the malleable interests, the foundries in this territory show a tendency to buy iron for shorter delivery periods. In buying for deferred delivery they pursue a cautious hedging policy, contracting for only a part of their estimated requirements and covering the remainder by later purchases. The furnace interests favor this policy, as it eliminates speculation. Just at present, however, the market is so dull that no sales are reported of any

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magnitude to justify special mention. The following prices are for September shipment, Chicago delivery:

Lake Superior charcoal	$18.25 to $18.75
Northern coke foundry, No. 1	16.75 to 17.25
Northern coke foundry, No. 2	16.25 to 16.75
Northern coke foundry, No. 3	16.00 to 16.25
Northern Scotch, No. 1	17.25 to 17.75
Southern coke, No. 1	15.85 to 16.35
Southern coke, No. 2	15.35 to 15.85
Southern coke, No. 3	15.10 to 15.60
Southern coke, No. 4	14.85 to 15.35
Southern coke, No. 1 soft	15.85 to 16.35
Southern coke, No. 2 soft	15.35 to 15.85
Southern gray forge	14.60 to 15.10
Southern mottled	14.60 to 15.10
Malleable Bessemer	16.25 to 16.75
Standard Bessemer	17.40 to 17.90
Jackson Co. and Kentucky silvery, 6%	19.40 to 19.90
Jackson Co. and Kentucky silvery, 8%	20.40 to 20.90
Jackson Co. and Kentucky silvery, 10%	21.40 to 21.90

(By Mail.)

Billets.—Current sales of open hearth forging billets are made at $28 base, Chicago. This price might be shaded on round lots, but there are only a few buyers in this district whose requirements run into any large tonnage.

Rails and Track Supplies.—The only rail business of any moment reported in this market was the sale closed last week of 10,000 tons of Bessemer rails, for early shipment, to the Duluth, Rainy Lake & Winnipeg. There are good inquiries for light rails and a fair run of current business in track supplies. We quote standard railroad spikes at 1.70c. to 1.80c., base; track bolts with square nuts, 2.30c. to 2.40c., base, all in carloads, Chicago. Light rails, 40 to 45 lb., $26; 30 to 35 lb., $26.75; 16, 20 and 25 lb., $27; 12 lb., $28, Chicago.

Structural Material.—New contracts taken by the fabricating interests on large jobs last week represent nearly 10,000 tons of material. This is the most satisfactory showing in a long time. It is stated that on large jobs prices are firm. In one of the important contracts closed in Chicago last week there was a difference of only 20c. per ton in the two best bids. On another important job the successful bidder had a margin of only 10c. per ton below the next bid. This information is given as evidence that prices are firm on mill material going into these large contracts. On small fabricated jobs prices are more irregular. The new power house in Chicago for the Commonwealth Edison Company, with an approach and trestle, requiring 3200 tons of material, was let to George W. Jackson, Inc., who also took a 550-ton contract for shop buildings in Chicago for the American Brake Shoe & Foundry Company. The Chicago & Western Indiana Railroad has closed a contract with the American Bridge Company for 2200 tons of track elevation. The Corbett Building, at Portland, Ore., 1900 tons, was let to the Northwest Bridge Company, Portland. The Capwell Building, at Oakland, Cal., 1000 tons, was let to the Judson Iron Works of San Francisco. The same fabricating interest booked 175 tons for additions to the City Hospital at San Francisco. The Virginia Bridge Company has taken for its Memphis plant the contract for locomotive shops of the Kansas City Southern Railway, at Shreveport, La., amounting to 300 tons. The principal sellers in this market report that they are holding firm at 1.40c., Pittsburgh, for plain material. We quote plain material from mill, 1.58c. to 1.63c., Chicago; from store, 1.80c. to 1.90c., Chicago.

Plates.—The plate mills have been depending on the car shops in recent years for their principal tonnage and the absence of new car orders is felt severely in this line of finished product. The steel car builders, however, still have a considerable amount of uncompleted work on hand from contracts taken last spring and the plate mills have not finished supplying the material specified for these cars. The larger interests represented in this market are holding 1.40c., Pittsburgh, as their minimum, but lower quotations are noted from eastern mills. We quote mill prices at 1.53c. to 1.63c., Chicago; store prices, 1.80c. to 1.90c., Chicago.

Sheets.—While there is sharp competition for any desirable tonnage of sheets, prices are fairly well maintained on current lots. The Inland Steel Company has kept its enlarged mill in steady operation this fall, going along at a comfortable rate without forcing production. At the present time the mills are running about 75 per cent. of full capacity. We quote as follows, Chicago: No. 10 annealed, 1.93c.; No. 28 black, 2.43c.; No. 28 galvanized, 3.43c. Prices from store, Chicago, are: No. 10, 2.10c. to 2.20c.; No. 12, 2.20c. to 2.30c.; No. 28 black, 2.85c. to 2.95c.; No. 28 galvanized, 3.90c. to 4c.

Bars.—New business in bars consists principally of orders for concrete reinforcement. Specifications for soft steel bars are very satisfactory. The plow manufacturers report that they have had a larger fall trade this year than they ever had before and they are planning to operate their factories this winter to the fullest capacity. The bar iron market, however, remains dull, as the railroads are still limiting their purchases to small lots for immediate shipment. We quote as follows: Soft steel bars, 1.58c. to 1.63c.; bar iron, 1.37½c. to 1.40c.; hard steel bars rolled from old rails, 1.45c. to 1.55c., all Chicago. From store, soft steel bars, 1.80c. to 1.90c.

Rods and Wire.—Sales of wire products by the leading interest during September have reached a very satisfactory total, without breaking any records. Owing to the fact that jobbers have had no assurance of an advance in prices this fall, on which they might make a profit by purchasing heavily, as they did last year, the business done has been of a strictly consumptive character. For this reason September sales are considered especially satisfactory. Jobbers' carload prices, which are quoted to manufacturing buyers, are as follows: Plain wire, No. 9 and coarser, base, 1.68c.; wire nails, 1.88c.; painted barb wire, 1.88c.; galvanized, 2.18c., all Chicago.

Merchant Steel.—Specifications continue on a very satisfactory basis, especially from the manufacturers of agricultural implements. Sales from store are at about the same rate that has prevailed during the past two months and represent a fair volume of business.

Cast Iron Pipe.—The United States Cast Iron Pipe & Foundry Company was the successful bidder on a letting last week on 800 tons of water pipe at Austin, Minn. The same interest was also awarded 400 tons at Waverly, Ohio. Routine orders are keeping up at a fairly satisfactory rate. On current business we quote, per net ton, Chicago, as follows: Water pipe, 4-in., $27; 6 to 12 in., $26; 16-in. and up, $25, with $1 extra for gas pipe.

Old Material.—The reports of lower prices for finished steel products, which were given such extensive circulation in the daily press last week, have had their effect on so sensitive barometer as the scrap market, even though these reports did not have any substantial basis in fact. The movement of scrap is very small for this season. Railroad sales have been light and only a part of the material that has been actually offered by the railroads has been sold. There is a close sympathetic connection between the scrap market and the movement of securities and financial affairs, and dealers do not expect much improvement in the demand for old iron and steel until more confidence is expressed in the future by financial leaders. The prices quoted below are for delivery to buyers' works, all freight and switching charges paid. Sellers of scrap usually receive 50c. to $1 less in this district, owing to high switching charges. Following prices are per gross ton, delivered, Chicago:

Old iron rails	$16.00 to $16.50
Old steel rails, rerolling	15.25 to 15.75
Old steel rails, less than 3 ft	13.50 to 14.00
Relaying rails, standard sections, subject to inspection	24.00 to 25.00
Old car wheels	14.00 to 14.50
Heavy melting steel scrap	12.25 to 12.75
Frogs, switches and guards, cut apart	12.25 to 12.75
Shoveling steel	11.75 to 12.25

The following quotations are per net ton:

Iron angles and splice bars	$14.00 to $14.50
Iron car axles	19.50 to 20.00
Steel car axles	19.50 to 20.00
No. 1 railroad wrought	12.00 to 12.50
No. 2 railroad wrought	11.00 to 11.50
Springs, knuckles and couplers	11.75 to 12.25
Locomotive tires, smooth	17.00 to 17.50
No. 1 dealers' forge	10.50 to 11.00
Steel axle turnings	8.50 to 9.00
Machine shop turnings	7.00 to 7.50
Cast and mixed borings	4.75 to 5.25
No. 1 busheling	10.00 to 10.50
No. 2 busheling	8.00 to 8.50
No. 1 boilers, cut to sheets and rings	9.00 to 9.50
No. 1 cast scrap	12.75 to 13.25
Stove plate and light cast scrap	11.00 to 11.50
Railroad malleable	11.25 to 11.75
Agricultural malleable	10.50 to 11.00
Pipes and flues	9.25 to 9.75

Philadelphia

PHILADELPHIA, PA., September 27, 1910.

The demand for pig iron is probably a trifle less active, with sales slightly smaller than during the previous week. The movement in finished materials continues light; consumers have not yet adapted themselves fully to the position taken by the mills regarding prices, and business placed has been almost entirely for immediate requirements. Billets are quiet. No definite information regarding the dissolution of the present scrap buying arrangement of the steel and iron mills in this territory has developed.

Iron Ore.—A few inquiries are reported, but these are believed to be more for the purpose of fixing a price than with any intention of making purchases. Importations at this port during the week ending September 24 aggregated 31,971 tons, valued at $125,554. Available data show the classification of importations during August to have been as follows: Spanish and Mediterranean, 49,049 tons; Cuban,

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28,280 tons; Swedish, 39,435 tons, and Newfoundland, 24,691 tons. August importations of Cuban ore at the port of Baltimore totaled 111,450 tons.

Pig Iron.—A fair volume of business has been transacted in the foundry grades, although in steel making irons less activity has been shown. Consumers are still inquiring for quotations on first quarter deliveries, and, while some sellers will accept to-day's prices for deliveries beginning next month or so and extending into the first quarter, quotations for strictly next year delivery do not come out freely and such as are made range about 50c. above the present market. Reports of the recent meeting of the Eastern Pig Iron Association indicate, unless a better market develops, practically all the producers in this territory will curtail production after the first of the year. Owing to orders on hand and the difficulties in connection with the storage of ore still to come in this year, it will be necessary for them to be governed largely in this matter by individual circumstances. The status of unfilled orders is understood to be practically unchanged, although stocks on hand show a moderate increase, and from recent curtailments in delivery, particularly in basic iron, promise to show a further increase in the near future. Sales during the week have been principally in the foundry grades. One sale of 2000 tons for general foundry use for this year's delivery, at private terms, is reported. Prices for standard brands of eastern Pennsylvania No. 2 X foundry are, as a rule, flatly on a $16, delivered, basis, for shipment this year, although in a few instances may extend into the first quarter. Reports of occasional prompt lot sales at 10c. to 15c. under that figure, made in close competition, are heard, while now and then small sales at $16.25, delivered, are reported; special circumstances, however, surround such transactions. The cast iron pipe makers have taken on further tonnages for this year's delivery, in which Southern iron has principally figured. One sale of 4000 tons and two of 1000 tons of low grade Southern iron have been reported at the $11, Birmingham, basis for No. 2 foundry. Small lots of high grade iron have also been taken by pipe makers, while several are understood to still be in the market for low grade. There has been little movement in Virginia foundry grades; sales of moderate lots of No. 2 X and No. 2 plain have been made in this territory at unchanged prices, equal to $16 to $16.50, delivered, for No. 2 X foundry. Forge iron is quiet; occasional small lots for rolling mill purposes are sold, but no large inquiries are reported; $14.50 to $15 would about represent the full range of the market, dependent on tonnage and delivery point. The demand for the steel making grades has again quieted down. Makers are inclined to hold basic firmly at $15, delivered, although it develops that that price was cut 50c. in one instance several weeks ago, but subsequent sales were made at $15. Melters of this grade are pretty well taken care of as far as this year's needs are concerned and are now asking shippers to defer deliveries. Little interest is shown in low phosphorus iron. The recent inquiry for 5000 tons of this grade has been withdrawn. For delivery during the remaining portion of the year quotations for standard eastern Pennsylvania brands, delivered in buyers' yards, are as follows:

Eastern Pennsylvania, No. 2 X foundry	$16.00
Eastern Pennsylvania, No. 2 plain	$15.50 to 15.75
Virginia, No. 2 X foundry	16.00 to 16.50
Virginia, No. 2 plain	16.00 to 16.25
Gray forge	14.50 to 15.00
Basic	15.00
Standard low phosphorus	22.50

Ferromanganese.—Sellers note a light demand for small lots in New England and the West. Prices are nominal, $39.50 to $40, seaboard, about representing the market for both prompt and forward shipments.

Billets.—Some large lot business is still pending, but current orders are small and principally for prompt delivery. Specifications on orders enable local mills to operate on a restricted basis. For desirable lots of standard open hearth rolling billets $26, delivered in this territory, can be done, although small lots command 50c. advance. Forging billets, which are in better demand than rolling billets, are comparatively firm at $28, Eastern mill, with the usual extras for high carbons and special sizes.

Plates.—Buyers have not yet begun to come into the market, the tendency being to await further assurances that the mills will maintain their determination not to make price concessions. Eastern mills have not cut the 1.55c., delivered, quotation, which has been the minimum carload for some time. On miscellaneous business 1.60c. has been held by a number of mills. While specifications have come out freely, new business is light.

Structural Material.—Several building propositions, mostly in nearby territory, are expected to be placed shortly. Very little in the way of new projects of any size have come before the trade recently. Prices of plain shapes are being firmly maintained at 1.55c., minimum, delivered in this vicinity. Low prices, however, are reported for fabricated work.

Sheets.—A slightly better volume of business has enabled mills to operate on a trifle larger basis, but the demand is still quite irregular and usually for small prompt lots. There does not seem to be as much disposition to make further price concessions, although for attractive business some mills might go lower. For ordinary business Eastern makers name the following range for prompt shipment: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 and 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

Bars.—A few fair inquiries are reported, but the bulk of the trade is in small lots. Competition for what little business is offered is pretty sharp, and while some makers are firm at 1.40c., minimum, for refined bars, others would take orders on which specifications are considered desirable at a shade under that figure. Steel bars are firm at 1.55c. to 1.60c., delivered here.

Coke.—The demand has been mostly for small lots of foundry coke for early delivery, with an occasional inquiry for requirements in the early part of next year. Prices are firmly held at $2.25 to $2.50 per net ton, at oven. There is no demand for furnace coke, on which sellers name $1.65 to $1.85, at oven, as about representing quotations for that grade. The following range of prices per net ton is named for delivery in buyers' yards in this territory:

Connellsville furnace coke	$4.00 to $4.15
Foundry coke	4.50 to 4.75
Mountain furnace coke	3.60 to 3.75
Foundry coke	4.10 to 4.35

Old Material.—Business moves slowly, the trade awaiting developments regarding the purchasing arrangements of the associated buyers. Transactions in the mean time are along narrow lines. Sentimentally the market is stronger, but it has not been substantiated by increased buying. Strictly No. 1 heavy melting steel is hard to get at $14, delivered, and $14.25 has been paid, while brokers in some cases are holding for higher prices. Stove plate at $10, delivered, is scarce, owing to the movement of this grade to other districts at higher prices. The following range about represents bids and offers for deliveries in buyers' yards, eastern Pennsylvania and nearby points, carrying a freight rate from Philadelphia ranging from 45c. to $1.35 per gross ton:

No. 1 steel scrap and crops	$14.00 to $14.25
Old steel rails, rerolling	15.75 to 16.25
Low phosphorus	19.00 to 19.50
Old steel axles	20.00 to 20.50*
Old iron axles	26.50 to 27.50*
Old iron rails	18.00 to 18.50*
Old car wheels	13.75 to 14.25
No. 1 railroad wrought	16.25 to 16.75
Wrought iron pipe	13.25 to 13.75
No. 1 forge fire	12.00 to 12.50
No. 2 light iron	7.50 to 8.00
Wrought turnings	8.75 to 9.25
Cast borings	9.25 to 9.75
Machinery cast	14.00 to 14.50
Railroad malleable	13.50 to 14.00
Grate bars	11.75 to 12.25
Stove plate	10.00 to 10.50

* Nominal.

St. Louis

ST. LOUIS, September 26, 1910.

Foundries closely allied with the railroad interests report very little new business, and state that until the rate question is adjusted they cannot reasonably look for much improvement. In other lines there is a seasonable demand, which appears to be gaining in volume with the improved crop outlook. Fear is being expressed concerning car shortage, and fifty Illinois coal field operators recently met in this city for the purpose of coming to an understanding as to the division of coal cars.

Coke.—Only a moderate business is going in coke, although a few quite large inquiries are still pending, of which one at least is expected to be closed within a day or two. One leading broker mentions the sale of 250 cars 48-hour coke, for shipment over a year beginning with October 1; also the sale of 35 cars Connellsville foundry coke, for shipment in equal monthly quantities to July 1, 1911. There is an inquiry out for 1500 tons foundry coke, for shipment from date to May, 1911. With most brokers, sales were confined to small lots, mainly for prompt shipment. There is a firmer tone to the market, owing to a growing apprehension of car shortage in the coke producing districts. Sellers claim this is liable to cause an advance in distributing markets in the near future. We quote best grades Connellsville 72-hour foundry at $2.35 to $2.50, according to time of shipment, with second quality offered at $2.10 to $2.25;

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Virginia foundry coke, $2.15 to $2.25, all per net ton at oven.

Pig Iron.—The past week witnessed more interest in pig iron than for some time, but prospective purchasers are slow in closing. The inquiries are principally for shipment over the first half of 1911. Consumers appear to be unwilling to pay the premium demanded for next year's delivery. Among the inquiries reported are the following: One house enumerates an inquiry for 1800 tons, 45 per cent. silicon, shipment over last quarter; 1000 tons No. 2 Southern, 1000 tons Northern foundry, 800 tons No. 2 Southern and another inquiry for the same quantity. For sales the following were reported: 750 tons No. 2 Southern, 250 tons high silicon, three sales of 100 tons each No. 2 Southern and smaller lots for shipment mainly prior to January, 1911, with some for first quarter 1911. Another broker reports sales of 1000 tons malleable iron, 1000 tons gray iron, 200 tons high silicon. A third office mentions sale of 1000 tons Lake Superior charcoal iron to a local foundry, shipment over remainder of year; also 200 tons malleable for same delivery. For inquiries the following were received: From a local stove company 1000 tons Northern No. 2 foundry, 1000 tons Southern No. 2 foundry, 700 tons soft No. 2, shipment over the first half of 1911; also inquiry for 500 tons No. 2 Southern for same delivery. Another leading broker mentions an inquiry for 6000 tons No. 2 Northern and Southern foundry, shipment over first half of 1911, and 500 tons analysis iron for shipment over the remainder of year. A merchant seller reports sales agregating 900 tons Southern foundry for shipment over remainder of year, Another merchant seller mentions inquiry for 300 tons Southern coke and 300 tons charcoal iron. The irregularity in the market price is still noted. In case of No. 2 Southern foundry, $11, Birmingham, is named for prompt and $11.50 for shipment over the remainder of year. For shipment over the first half of 1911 $12 is asked by some furnaces, while others quote $11.50. There has been some business worked for malleable and for foundry iron on offers below current quotations. The sale of 5000 tons basic to a local foundry was made by an Ohio furnace on private terms. We quote Southern Ohio at $15, f.o.b. furnace.

Old Material.—There is no improvement in the demand from consumers. Leading dealers state that, while busy, it is mainly with old contracts, new business being of small proportions. As a result the market shows a further decline on several items in the list. There were no railroad offerings the past week. We quote dealers' prices as follows, per gross ton, f.o.b. St. Louis:

Old iron rails	$14.00 to $14.50
Old steel rails, rerolling	13.50 to 14.00
Old steel rails, less than 3 ft	12.25 to 12.75
Relaying rails, standard sections, subject to inspection	24.50 to 25.00
Old car wheels	13.50 to 14.00
Heavy melting steel scrap	12.00 to 12.50
Frogs, switches and guards, cut apart	12.25 to 12.75

The following quotations are per net ton:

Iron fish plates	$12.00 to $12.50
Iron car axles	18.00 to 18.50
Steel car axles	18.00 to 18.50
No. 1 railroad wrought	12.00 to 12.50
No. 2 railroad wrought	11.00 to 11.50
Railway springs	11.00 to 11.50
Locomotive tires, smooth	16.00 to 16.50
No. 1 dealers' forge	10.00 to 10.50
Mixed borings	5.00 to 5.50
No. 1 busheling	10.50 to 11.00
No. 1 boilers, cut to sheets and rings	9.00 to 9.50
No. 1 cast scrap	11.00 to 11.50
Stove plate and light cast scrap	9.00 to 9.50
Railroad malleable	9.50 to 10.00
Agricultural malleable	8.50 to 9.00
Pipes and flues	9.50 to 10.00
Railroad sheet and tank scrap	9.00 to 9.50
Railroad grate bars	8.50 to 9.00
Machine shop turnings	7.75 to 8.25

Six hundred flat cars have been built and equipped by the Texas & Pacific Railroad for handling the Louisiana cane crop this season and 300 more are to be on the rails before the sugar crop is well advanced.

During the last forty-two days, the Union Electric Light & Power Company has changed at its Ashley street plant another 5000 kw. turbine generator to one of 12,000 kw. capacity. This is the third 12,000 kw. or 16,000-hp. capacity turbine electric generator the lighting company has installed since September, 1909. The company has also recently installed 12 new boilers, with a total capacity of 10,000 hp. The total hp. capacity of the entire plant is 80,000, making the generating plant one of the largest in the United States.

Architect Link has prepared the plans for the Barnes Hospital, which will be a new structure having a frontage of 850 ft. along Kingshighway and will extend 400 ft. back toward the Wabash tracks. The cost of the building will be close to $1,500,000. There will be a group of ten buildings in all.

Birmingham

BIRMINGHAM, ALA., September 26, 1910.

Pig Iron.—It is now generally understood that a basis of $11.50 per ton, Birmingham, would be accepted by the majority of producers for shipment during the first quarter of next year. The amount sold for such delivery is comparatively small, and no unusual efforts are being made by sellers to increase it, although all inquiries are given serious consideration and even first half commitments are not objectionable to all sellers. It cannot be said at what figures shipments for the entire first half could be had. Quotations made within the week show a difference of 50c. per ton in first and second quarter shipments, but no sales are known to have resulted. A sale of 4000 tons for delivery during the remainder of this year has just been made and the smaller lots sold for comparatively early shipments are attractive in the aggregate. Nothing is heard of a lower price than $11.50 per ton, Birmingham, even for spot shipments and, as is always the case when the market is firm, favorite brands would probably bring a still higher price where the tonnage is small. One of the large producers has announced that orders booked for the remainder of this year exceed the probable make for that time and accordingly has a prohibitive asking price for deliveries prior to January 1, 1911. Another large interest has advanced quotations to $12 per ton, Birmingham, on deliveries during the last two months of this year and for the first quarter of 1911, and still another has announced that only low grades are available for first quarter shipment. From present indications the production for October will be about equal to that for this month, but it is not likely that capacity will be increased about November 1. There is no reason to believe that the actual consumption will now continue at the present rate which in this district is better than normal.

Cast Iron Pipe.—The situation in this market as a whole is not so encouraging, owing to the failure of large contracts to materialize as expected. Business placed in the past fortnight is very small comparatively, and it is not unlikely that concessions have been made in the matter of price even for the small lots offered. Published quotations have not been changed and it is understood that the leading interests are not solicitous for business where lower prices are necessary, but the market is not in a satisfactory condition and all quotations are nominal. We quote water pipe as follows, per net ton, f.o.b. cars here: 4 to 6 in., $22.50; 8 to 12 in., $21.50; over 12-in., average $20.50, with $1 per ton extra for gas pipe.

Old Material.—There are no indications of heavier movement and dealers' views on prices are unchanged. All trading for some weeks past has been on the hand-to-mouth order and all parties concerned are apparently willing to continue that conservative course. Dealers' stocks have probably increased this month, but the aggregate accumulation in this district is comparatively small. We quote dealers' asking prices as follows, per gross ton, f.o.b. cars here:

Old iron axles	$15.50 to $16.00
Old iron rails	13.50 to 14.00
Old steel axles	15.00 to 15.50
No. 1 railroad wrought	13.50 to 14.00
No. 2 railroad wrought	9.50 to 10.00
No. 1 country wrought	8.50 to 9.00
No. 2 country wrought	8.00 to 8.50
No. 1 machinery	10.00 to 10.50
No. 1 steel	12.00 to 12.50
Tram car wheels	10.00 to 10.50
Standard car wheels	11.00 to 11.50
Light gas and stove plate	8.50 to 9.00

Cincinnati

CINCINNATI, OHIO, September 28, 1910.—(*By Telegraph.*)

Pig Iron.—A little more interest is manifested on the part of prospective buyers, but few actual sales of any size can be reported. For first quarter shipment 500 tons of Southern No. 2 foundry was sold at $11.50, Birmingham, and for prompt delivery 1000 tons of high phosphorus Southern Nos. 2 and 4 foundry was taken on a basis of $11 for the No. 2 grade. For first quarter shipment a southern Ohio melter is said to have bought about 700 tons each of Northern Nos. 2 and 3 foundry at $14.50, Ironton, for the first named grade, and for the same delivery 1000 tons of Northern malleable was sold a Western consumer at $14.75, furnace. A number of small orders for foundry irons are coming in and some of these are understood to be from large consumers, who are filling their immediate requirements with present low priced iron in preference to using that already contracted for at higher figures. The 30,000 tons of basic wanted by a nearby Ohio steel manufacturer has not yet been purchased. An Eastern inquiry for 8000 tons of Nos. 2, 3 and 4 foundry is being figured on, but the business is expected to go to the Valley furnaces. A Western stove company is in the market for 5000 tons of about equal quantities of Northern, Southern and high silicon. A cen-

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tral Indiana melter is asking for 800 tons of either Northern or Southern, and an Ohio pipe maker wants 500 tons each of Southern Nos. 2 and 4. Prices are unchanged for the remainder of this year, $11 to $11.50, Birmingham basis, being quoted for Southern irons, and $14.50, Ironton, for Northern. No well defined figures are available for next year, but it is known that some interests will accept business for first quarter delivery at $11.50 for Southern and $14.50, at furnace, for Northern foundry No. 2. For immediate delivery and for the remainder of the year, based on freight rates of $2.25 from Birmingham and $1.20 from Ironton, we quote, f.o.b. Cincinnati, as follows:

Southern coke, No. 1 foundry	$14.75 to $15.25
Southern coke, No. 2 foundry	14.25 to 14.75
Southern coke, No. 3 foundry	13.75 to 14.25
Southern coke, No. 4 foundry	13.50 to 14.00
Southern coke, No. 1 soft	14.75 to 15.25
Southern coke, No. 2 soft	14.25 to 14.75
Southern gray forge	13.50 to 14.00
Ohio silvery, 8 per cent. silicon	19.20
Lake Superior coke, No. 1	16.20 to 16.70
Lake Superior coke, No. 2	15.70 to 16.20
Lake Superior coke, No. 3	15.20 to 15.70
Standard Southern car wheel	25.25 to 25.75
Lake Superior car wheel	22.25 to 22.75

(*By Mail.*)

Coke.—The Connellsville district is reported to have some furnace coke that can be bought, for spot shipment, at from 5c. to 10c. below market quotations. A large foundry coke producer and consumer in Pennsylvania is said to have decided on dampening down its own ovens and purchasing its requirements in the open market. The regular contract prices remain the same and Connellsville, Pocahontas and Wise County furnace coke ranges between $1.70 to $1.85 per net ton, at oven. Probably as low as $1.50 could be done for spot shipment in the first named field. There is no change in foundry coke, $2.10 to $2.15 representing the average contract price for standard grades, with the usual slight advance or reduction for a special brand.

Finished Iron and Steel.—The carload business, with direct shipment from mill to customer, is fairly good. Steel bars and structural material are quoted at 1.40c., Pittsburgh. Local warehouse prices are from 1.80c. to 1.90c. Although the narrower sizes of plates can be bought at 1.35c. mill, not much business in this line has been obtained in this immediate vicinity.

Old Material.—The railroads do not seem to be willing to accept present prices offered and are selling sparingly. Some good sized stocks of scrap are piled up in dealers' yards, and consumers appear to be buying merely to fill immediate requirements. Prices for delivery in buyers' yards, Cincinnati and southern Ohio, are as follows:

No. 1 railroad wrought, net ton	$12.50 to $13.00
Cast borings, net ton	4.50 to 5.00
Steel turnings, net ton	6.00 to 7.00
No. 1 cast scrap, net ton	11.50 to 12.50
Burnt scrap, net ton	8.00 to 9.00
Old iron axles, net ton	17.50 to 18.50
Old steel rails, gross ton	14.50 to 15.00
Relaying rails, 50 lb. and up, gross ton	22.50 to 23.50
Old car wheels, gross ton	12.00 to 13.00
Heavy melting steel scrap, gross ton	12.00 to 12.50

Rogers, Brown & Co. have been appointed exclusive sales agents for the charcoal and coke iron produced by the Silver Creek Furnace Company, Rome, Ga. The furnace at Rome has been producing charcoal iron for some time, but is expected to go on coke iron early in October.

Buffalo

BUFFALO, N. Y., September 27, 1910.

Pig Iron.—The inquiry for first quarter and half deliveries of foundry and malleable continues in considerably heavier volume than reported last week, aggregating about 30,000 tons, principally from New York State points. Only a comparatively small tonnage has been placed, as furnace interests are not quoting for the 1911 deliveries asked for except at prices above those for present quarter. New business coming in for fourth quarter deliveries is light, comprising carload and 100-ton lots, chiefly foundry and malleable, with a limited amount of small buying in basic. The Wickwire Steel Company expects to have its new furnace ready to blow in early next week. There is no quotable change in fourth quarter prices. Most furnaces are maintaining a slightly firmer attitude and one interest reports it is naming prices 25c. per ton higher for foundry grades than those shown in the schedule given below, which we quote as fairly representing the market, for prompt shipment and remainder of year, f.o.b. Buffalo:

No. 1 X foundry	$14.75 to $15.25
No. 2 X foundry	14.50 to 14.75
No. 2 plain	14.25 to 14.50
No. 3 foundry	14.00 to 14.25
Gray forge	14.00 to 14.25
Malleable	14.75 to 15.25
Basic	15.25 to 15.75
Charcoal	18.25 to 18.75

Finished Iron and Steel.—The market has shown a decided lull in buying the past week, affecting nearly all lines of finished products, attributable undoubtedly to the press reports of price reductions, the counteracting influence of the contradictions given out by producers and sales agencies having apparently not had time to take effect. A few agencies, however, report a fair volume of orders and it is believed the check in the placing of new business will be only temporary, although in some instances purchasers' stocks are accumulating on account of heavy mill shipments now going forward on orders placed some months ago, and, consequently, there is not the same need of buying in such cases as there otherwise would have been. Prices on bars, shapes and plates are still being held at 1.40c., Pittsburgh, on large lots, and 1.45c. for less desirable business, and sellers are announcing that no concessions will be made. The Canadian export trade continues brisk, and the local agency of the leading interest reports the closing of a considerable portion of the large tonnages of bar products and structural material mentioned in these reports two weeks ago as being under negotiation and that it is expected the bulk of the remainder will be closed this week. In structural lines there has been a fairly active inquiry, but only a limited amount of business has been closed. Bids are being received this week for a small tonnage of steel for the Allen E. Klopp garage building, West Mohawk and Genesee streets, Buffalo, and revised plans will also be out for figuring this week. Contract for 400 tons for the Buffalo & Lake Erie Traction Company's 885-ft. viaduct over Twenty Mile Creek, near Ripley, N. Y., has been taken by the American Bridge Company.

Old Material.—The market remains dormant in most lines, although some activity is reported in iron car axles, malleable cast and old car wheels, transactions in the last named, however, being at a lower price level. There is practically no demand for scrap from the steel mills in this district and the price for heavy melting steel quoted in the schedule is based on the market price of other districts, with freight taken into consideration. The general situation shows no indication of a forward movement for the near future. We quote as follows, per gross ton, f.o.b. Buffalo:

Heavy melting steel	$12.25 to $12.75
Low phosphorus steel	17.00 to 17.50
No. 1 railroad wrought	14.00 to 14.50
No. 1 railroad and machinery cast scrap	13.25 to 13.50
Old steel axles	17.50 to 18.00
Old iron axles	23.00 to 23.50
Old car wheels	14.00 to 14.50
Railroad malleable	13.00 to 13.25
Boiler plate	10.25 to 10.75
Locomotive grate bars	10.50 to 11.00
Pipe	10.50 to 11.00
Wrought iron and soft steel turnings	6.75 to 7.25
Clean cast borings	5.75 to 6.25
No. 1 busheling scrap	11.25 to 12.00

A hearing before a representative of the Interstate Commerce Commission is to be held in Buffalo October 5 to hear arguments and receive testimony to be presented by the iron and steel manufacturers of the Buffalo district, who are contending that the proposed increase by the railroads in the freight rate on coke between the Connellsville district and Buffalo is "discriminating and in restraint of trade," as the rate on coke to other iron manufacturing districts has not been increased.

New York

NEW YORK, September 28, 1910.

Pig Iron.—The principal transaction of the past week in foundry iron is reported from New England and was the purchase by a jobbing foundry of 4000 tons, of which one-half was 1.50 to 1.75 per cent. and the remainder 2.75 to 3.25 per cent. silicon. Deliveries extend over the first half of 1911. Competition was close and represented a number of producers in the Central West and Western New York districts. In some cases considerably higher prices were asked than the basis prevailing for delivery this year, but the business was evidently taken by a furnace willing to make a concession to secure a certain amount of back log for the new year. In New York City territory a railroad supply company having a number of foundries and a soil pipe company have been inquiring for iron for delivery this year. In one case from 1500 to 2500 tons is wanted, divided among No. 2 foundry, gray forge and high silicon grades. One New York interest bought 450 tons for a Southern plant. In another case 300 tons was bought by a New Jersey machinery foundry which is also in the market for 2500 tons for shipment through the last quarter. Eastern pipe foundries have continued to buy in moderate lots, paying around $14.25 for low grade iron delivered at works. Several furnaces included in the Eastern Pig Iron Association will probably blow out in the near future—one each in New Jersey, Lehigh Valley and Schuylkill Valley. While some producers still maintain the position of holding for a higher price for iron for 1911, a case has

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cropped up here and there in which a seller has been willing to take close to to-day's prices for deliveries sixty or ninety days over the line. If a sufficient number of furnaces blow out the tendency to carry over 1910 prices into 1911 may be checked. We quote as follows for iron at tidewater: Northern No. 1 foundry, $15.75 to $16; No. 2 X, $15.25 to $15.75; No. 2 plain, $15.25 to $15.50. Southern No. 1 foundry is quoted, $15.75 to $16; No. 2, $15.25 to $15.50.

Finished Iron and Steel.—Conditions, if no better, are no worse and apprehension seems to have disappeared, although no marked improvement is anticipated for weeks and perhaps months. The trade appears confident that the low level has been reached and that no more business will be secured by any further reduction of prices. The mills have quite generally adjusted themselves to the diminished demand and can comfortably await a turn of the tide. Prices are a trifle firmer, but there is still some shading of the quoted price for narrower plates and large orders for plain material. An increased number of fabricated contracts were closed last week, mostly of moderate average tonnage, but making a considerable total. Conditions in other lines remain practically unchanged. Among contracts closed are two apartment houses in New York City, one at Eighty-ninth and the other at Ninetieth street and Broadway, requiring together about 2000 tons, taken by the American Bridge Company. Levering & Garrigues secured 800 tons for a loft on Centre street and 600 tons for the Shanley Hotel. The Kansas City Southern shops at Shreveport, 300 tons, went to the Virginia Bridge & Iron Company. For the Philadelphia & Reading engine house in the mining regions Lewis F. Shoemaker & Co. will fabricate 350 tons. The Utica Hotel, 1100 tons, was taken by the Buffalo Structural Steel Company. The Central Railroad of New Jersey bridge at Bayonne, 300 tons, was awarded the Phœnix Bridge Works, and the New Jersey Zinc Company's work at Palmerton, 2200 tons, to the Lackawanna Bridge Company. The Michigan Central's bridge work at Detroit, 500 tons, and the Howard Car Company's building at Galion, Ohio, 350 tons, are reported awarded. An office building on West Twenty-second street, 550 tons, went to the Irving Structural Steel Company; an apartment on West 112th street, New York City, 300 tons, to the Hudson Structural Steel Company; a loft on West Twenty-third street, 575 tons, to the Hay Foundry & Iron Works; a car barn for a Connecticut electric railroad company at New Haven, 600 tons, to the Berlin Construction Company, and a bridge for the Cape Cod Canal, 600 tons, to the Pennsylvania Steel Company. No decision has been reached on the bids recently closed for the Long Island Railroad work, nor is it known whether 6000 or 12,000 tons will be taken. The Philadelphia & Reading will shortly ask bids for about 2500 tons for improvements at Port Richmond. Bids were reported as closed September 26 on a 12-story apartment house at Seventy-sixth street and Park avenue, New York City, requiring 600 tons. Quotations continue as follows: Plain structural material, plates and steel bars, 1.56c. to 1.61c., and bar iron, 1.45c. to 1.50c., all New York.

Old Material.—No large sales have come to light, but quite a volume of business has been closed in moderate quantities of various classes of material. Heavy melting steel scrap is in fair demand, with some sales made at ruling prices. A few of the rolling mills have made purchases of wrought scrap and such grades as are suitable for busheling. The demand for wrought pipe appears to have been filled and this material has latterly been quite dull. Cast scrap is not in as good request as a week ago, buyers having apparently satisfied their requirements for the present. Cast borings and wrought turnings are exceedingly quiet, while old car wheels seem to be completely friendless. Relaying rails are accumulating, but it is difficult to find any buyers for them. Dealers' quotations, per gross ton, New York and vicinity, are as follows:

Rerolling rails	$12.50 to $13.00
Old girder and T rails for melting	11.50 to 12.00
Heavy melting steel scrap	11.50 to 12.00
Relaying rails	19.00 to 20.00
Standard hammered iron car axles	22.00 to 22.50
Old steel car axles	17.00 to 17.50
No. 1 railroad wrought	13.50 to 14.00
Wrought iron track scrap	12.50 to 13.00
No. 1 yard wrought, long	12.75 to 13.25
No. 1 yard wrought, short	11.75 to 12.25
Light iron	5.00 to 5.50
Cast borings	6.50 to 7.00
Wrought turnings	6.50 to 7.00
Wrought pipe	11.00 to 11.50
Old car wheels	12.00 to 12.50
No. 1 heavy cast, broken up	12.50 to 13.00
Stove plate	9.50 to 10.00
Locomotive grate bars	9.50 to 10.00
Malleable cast	12.50 to 13.00

Steel Rails.—The National Railways of Mexico has closed for 10,000 tons of rails in the past week. The previous order was for 12,000 tons. The Carnegie Steel Company has booked 2000 tons for the Fostoria & Fremont trolley line in northwestern Ohio, 500 tons for the Ashland Coal, Iron & Railway Company, Ashland, Ky., and 500 tons for the Berwind-White Coal Mining Company.

Cast Iron Pipe.—The most important letting in sight at present is that of Croton, N. Y., October 11, 900 tons. An inquiry is in the market through export houses for 1200 tons for Havana, Cuba. A Boston firm is also in the market for 1800 tons for the requirements of a number of small New England companies. The prospects for business with private companies have improved of late, but such buyers are slow in closing negotiations, especially when they find a higher price asked for spring delivery. Carload lots of 6-in. are still quoted at $23.50 to $24 per net ton, tidewater.

Cleveland

CLEVELAND, OHIO, September 27, 1910.

Iron Ore.—Ore firms are rapidly finishing up their shipments and it is estimated that the October movement will show a falling off of nearly 50 per cent. September shipments are placed at about 6,000,000 tons. More boats are going out of commission for want of cargoes. There is an occasional inquiry for a small lot of ore for a mixture, one sale of 7000 tons being reported during the week. We quote prices as follows: Old Range Bessemer, $5; Mesaba Bessemer, $4.75; Old Range non-Bessemer, $4.20; Mesaba non-Bessemer, $4.

Pig Iron.—There is a fair volume of inquiry for foundry grades for the first quarter and first half deliveries, but prices are low, consumers being unwilling to pay little, if any, above last quarter prices, for delivery after the first of the year. Some furnace companies that are eager for first half tonnages have shaded their asking prices until they have reached the last quarter basis, on which some sales are reported. Among these is the purchase by a northern Ohio consumer that had an inquiry out for 1000 tons of No. 2 for the first half. This buyer is understood to have succeeded in getting his iron at $14, Valley furnace. Previous sales have been reported at this price, but they have included fourth quarter requirements at the same price. The largest new inquiry is from a central Ohio implement plant for 10,000 to 12,000 tons of foundry iron for the first half—7000 to 9000 tons of No. 2 and 2000 to 3000 tons of No. 3. A northern Ohio stove foundry is in the market for 4500 tons for the last and first quarter—1000 tons of No. 2 Northern, 1700 tons of No. 2 Southern and 1800 tons of silvery. A Cleveland concern is in the market for 1500 tons of No. 2 foundry and malleable for the last quarter. An inquiry from Detroit territory calls for 1500 tons of malleable for the last and first quarter. There is also considerable inquiry for lots of foundry iron ranging from 200 to 500 tons. A number of Ohio furnaces are still refusing to quote for next year's delivery, and others are not meeting present prices. There is considerable activity in silvery iron. The usual asking price of $18.50 for 8 per cent. silicon for delivery after January 1 is being shaded. For prompt shipment and the remainder of the year we quote, delivered, Cleveland, as follows:

Bessemer	$15.90
Northern foundry, No. 1	$15.00 to 15.50
Northern foundry, No. 2	14.50 to 14.75
Northern foundry, No. 3	14.00 to 14.50
Gray forge	14.00 to 14.25
Southern foundry, No 2	15.35 to 15.85
Jackson Co. silvery, 8 per cent. silicon	19.05 to 19.25

Coke.—The market is very dull. Foundries are nearly all under contract and there is little inquiry for that grade. Prices remain about stationary. Some foundry coke is being offered at $2, per net ton, at oven, for spot shipment, but the general quotation for the 72-hour foundry grade is $2.10 to $2.25 for prompt shipment and $2.25 to $2.50 for contract. We quote standard Connellsville furnace coke at $1.60 to $1.70 per net ton, at oven, for spot shipment and $1.70 to $1.80 on contract.

Finished Iron and Steel.—Specifications on contracts are fairly good and mill agencies report that tonnage booked in September will be somewhat larger than in August. While a good volume of orders is coming in they are generally for small tonnages, few being for over carload lots. The effect of the recent rumors of expected price reductions is still being felt and new orders are nearly all for immediate requirements. The demand is most active for steel bars. There is a fair demand for structural material, but plate orders are very light. The price situation in respect to steel bars, plates and shapes show no change, the 1.40c., Pittsburgh, price being firmly maintained except on plates that are being shaded by some of the smaller mills. The contract for the new building for the Cleveland Telephone Company, 500 tons, has been taken by the National Iron & Wire Company. Bethlehem sections will be used almost entirely. Plans are expected out shortly for the new Cleveland Art Museum. The demand for sheets is quite active and some of the smaller mills are now filled up for 4 or 5 weeks. While prices are no better the market appears to be slightly firmer, particularly on galvanized, because of the advance in spelter. Minimum quotations on No. 28 are 2.15c. for black and 3.15c. for galvanized. The

THE IRON AND METAL MARKETS

demand for iron bars continues light. Prices are stationary at 1.35c. to 1.40c. at mill. Local mills, however, are getting reports of lower quotations in the West. The demand for shafting has picked up somewhat but prices are weak for prompt shipment. There is a fair demand for light rails, but mills making rerolled rails are getting nearly all the business; makers of new rails have held quite firmly to prices recently, but may decide to meet competition.

Old Material.—The demand is very light and existing conditions lead some dealers to believe that there will be little or no increase in activity or improvement in prices before the first of the year. Mills are buying only in small lots for early requirements, not being disposed to contract for future delivery. The demand from the foundry trade is light, orders being closely confined to carload lots. The market is generally weak, although no changes are reported in prices. Dealers' prices per net ton, f.o.b. Cleveland, are as follows:

Old steel rails	$14.00 to $14.50
Old iron rails	16.00 to 16.50
Steel car axles	20.00 to 20.50
Heavy melting steel	13.00 to 13.25
Old car wheels	14.00 to 14.50
Relaying rails, 50 lb. and over	22.50 to 23.50
Agricultural malleable	12.00 to 12.50
Railroad malleable	13.00 to 13.50
Light bundled sheet scrap	9.00 to 9.50

The following prices are per net ton, f.o.b. Cleveland:

Iron car axles	$21.00 to $21.50
Cast borings	5.00 to 5.50
Iron and steel turnings and drillings	6.50 to 6.75
Steel axle turnings	8.75 to 9.00
No. 1 busheling	11.00 to 11.50
No. 1 railroad wrought	13.00 to 13.50
No. 1 cast	11.50 to 12.00
Stove plate	10.50 to 11.00
Bundled tin scrap	11.00 to 11.50

Metal Market

NEW YORK, September 28, 1910.

THE WEEK'S PRICES

Cents Per Pound.

	Copper.			Lead.		Spelter.	
Sept.	Lake.	Electrolytic.	Tin.	New York.	St. Louis.	New York.	St. Louis.
22	12.75	12.50	34.75	4.40	4.30	5.60	5.45
23	12.75	12.50	34.90	4.40	4.27½	5.60	5.45
24	12.75	12.50	....	4.40	4.27½	5.60	5.45
26	12.75	12.50	34.85	4.40	4.27½	5.60	5.45
27	12.75	12.50	35.15	4.40	4.27½	5.60	5.45
28	12.75	12.50	35.12½	4.40	4.27½	5.60	5.45

The immediate supply of pig tin in New York is concentrated in the hands of a few parties and prices for spot stock are high. Copper is weaker. Lead is weaker in the West. Spelter holds its own, with possibly an upward trend.

Copper.—A better inquiry from consumers exists in the copper market, but regardless of this the metal is a shade weaker in price than it was a week ago. The leading interests have been quoting electrolytic as low as 12.50c. for delivery over the next 30 days, and some spot stock has been sold at slightly under that price. From the way consumers are asking for quotations it appears that many of them have not bought enough to carry them over October and they will be obliged to come into the market soon. Some consumers have already placed a few orders for small lots, but they are moving very cautiously and appear to be feeling the market out. Most sellers continue to quote electrolytic at 12.50c. and lake at 12.75c. It is probable that in some quarters these prices might be shaded to good advantage, but that seems the general quotation, and if the report of the Copper Producers' Association, which is due October 7, is in any way encouraging the market will undoubtely stiffen at once. The exports of copper have been large so far this month, amounting in all to 28,215 tons. At the close of the London market to-day, spot copper was sold for £55 2s. 6d. and futures for £55 17s. 6d. The sales amounted to 400 tons of spot and 200 tons of futures. The market was steady.

Pig Tin.—There has been some good trading in spot tin and a fair part of the demand has come from consumers, although the greater volume of the business was done between dealers. While it is generally conceded that the London corner, which sent the market up of late, has been dissolved, there are plenty of speculators on the other side who are still following the bull movement and in consequence prices have not receded to any extent. For the second time within the last three months the larger part of the tin in New York available for early use has been concentrated within the hands of a few people, and what practically amounts to a corner now exists in this market. The market here is bare of stock and during the week the price for spot advanced 60 points. There was a Banca sale of tin in Holland to-day and the metal brought a price equal to about 34.62½c. c.i.f. New York. This low figure did not seem to affect the local price which was being well maintained this morning at around 35.15c. All things considered, prices asked for spot tin during the week have been fictitious and not consistent with the actual situation. Although the arrivals during the month have been small, amounting in all to 2781 tons, there should be enough spot tin on hand to take care of the consuming demand. A leading tin consuming interest shipped 100 tons of tin to London last Saturday. This was probably done with a view to depressing London prices. In New York this afternoon spot tin was sold for 35.12½c. The London market closed this afternoon with spot tin selling at £159 and futures at £158 15s. The sales amounted to 140 tons of spot and 220 tons of futures. The market was easy.

Tin Plates.—There was a drop in the price of foreign tin plates in the London market this morning and sales were made at 14s., which was 1½d. lower than the price asked at the same time last week. It is figured here that recent reductions of pig tin in the London market may have influenced the change in price. A good demand for domestic tin plates exists in the New York market and the price for 100-lb. coke plates continues at $3.84.

Lead.—The lead market is sagging in the West, and in St. Louis quotations have been reduced from 4.30c. to 4.27½c. This price is made by outside selling interests, but the American Smelting & Refining Company continues to maintain its quotation in East St. Louis at 4.32½c. This practically puts it out of the market and outside sellers are doing most of the trading there. The New York market remains firm and very little interest is being taken in the situation here. The American Smelting & Refining Company is making the lowest price in this vicinity, offering the metal at 4.40c.

Spelter.—The spelter market continues strong, but it is rather inactive. The general quotation in New York is 5.60c., but there are reports that some large producers have refused to sell at that price. There has been no great amount of stock held in New York for several months and the prices quoted are for prompt shipment from the West. To-day's prices are: New York, 5.60c.; St. Louis, 5.45c.

Antimony.—The antimony market continues stagnant. Prices are nominally as follows: Cookson's, 8.15c.; Hallett's, 7.87½c.; Chinese, 99½ per cent. guaranteed, 7.40c. to 7.50c.; Hungarian grades, 7.20c. to 7.30c.

Old Metals.—The demand is light but dealers' selling prices are unchanged, as follows:

	Cents.
Copper, heavy cut and crucible	12.25 to 12.50
Copper, heavy and wire	11.50 to 11.75
Copper, light and bottoms	10.75 to 11.00
Brass, heavy	8.00 to 8.25
Brass, light	6.75 to 7.00
Heavy machine composition	11.25 to 11.50
Clean brass turnings	7.75 to 8.00
Composition turnings	9.00 to 9.50
Lead, heavy	4.05 to 4.20
Lead, tea	3.80 to 3.95
Zinc scrap	4.15 to 4.25

Metals, St. Louis, September 26.—Lead is slow, at 4.25c. to 4.30c.; spelter is quiet and easier, at 5.40c. to 5.42½c., both at East St. Louis. Zinc ore is quoted at $43 to $44 per ton, Joplin, base. Tin is offered at 35.35c. per pound; antimony (Cookson's), 8.50c.; lake copper, 13.10c.; electrolytic, 12.95c., all at St. Louis. The demand for finished metals was better than for the previous week and there was some railroad buying.

Metals, Chicago, September 27.—There is a fair amount of buying of copper, which is considered satisfactory in view of general business conditions. Tin has dropped 1c. in this market, but its course is still very erratic. Lead is quiet. Spelter is growing stronger and it is stated that shipments are now in excess of the rate of production. The gas supply in the Kansas field is becoming unsatisfactory and enough smelting capacity has been closed down to make a considerable difference in the market. The galvanized sheet mills have been using less than their usual rate of consumption and this has about offset the decrease in production. Experts who watch the spelter market closely believe that any increase in the demand for sheets and other galvanized products would create a temporary shortage of spelter, with a corresponding upward movement in price, until the smelting interests are able to replace the smelting capacity which has been lost by the shortage of gas in Kansas. We quote Chicago prices as follows: Casting copper, 12¾c.; lake, 13c., in carloads, for prompt shipment; small lots ¼c. to ⅜c. higher; pig tin, carloads, 35½c.; small lots, 36½c.; lead, desilverized, 4.35c. to 4.40c., for 50-ton lots; corroding, 4.00c. to 4.05c., for 50-ton lots; in carloads, 2½c. per 100 lb. higher; spelter, 5.45c. to 5.50c.; Cookson's antimony, 10¼c., and other grades, 9c. to 10c.; sheet zinc is $7.50, f.o.b. La Salle, in carloads of 600-lb. casks. On old metals we quote for less than carload lots: Copper wire, crucible shapes, 12½c.; copper bottoms, 10⅝c.; copper clips, 12c.; red brass, 11¼c.; yellow brass, 9c.; light brass, 6s.; lead pipe, 4¼c.; zinc, 4¼c.; pewter, No. 1, 25½c.; tin foil, 30c.; block tin pipe, 32c.

The Machinery Markets

In some manufacturing centers the machinery trade is quite brisk, while in other quarters conditions are rather dull. In most of the markets catering to the export trade the demand from that source is keeping up well. The American Steel & Wire Company has issued a large list of machine tools to be purchased for its new plant at Corey, Ala., which has been put before the trade in Cleveland, and that is about the only list of any size reported during the week. An increase in inquiries is noted in Pittsburgh, where prices are being well maintained, although there seems to be no snap to the market. Jewelry manufacturers in New England are more busy than they have been at any time within the last two years, and that condition is expected to result in some trade there. The export business is attracting more attention in Cincinnati, but there is not a strong domestic demand. In Detroit the automobile industries are becoming busy again and some purchasing is being done. Manufacturers of power plant equipment are doing a good business in Milwaukee and there is an excellent demand for second-hand machinery. Fine crop reports have created an optimistic sentiment in Chicago and an improvement in trade is noted. The railroads are doing a little business in the Northwest and that is about the only part of the country where there is any noticeable demand from the railroad interests. On the North Pacific Coast there is an increased evidence of business expansion in all lines of manufacture. A good business is noted in Texas, where many new projects are being planned and a good buying movement is expected in the near future.

New York

NEW YORK, September 28, 1910.

Business is rather quiet in the New York market and the trade is devoting most of its attention to following up projects which promise to develop into business later on. Inquiries have, if anything, fallen off of late and the business now being done is largely in small lots. The New York Central Railroad has a list of about a half dozen tools now before the trade, but outside of that there is practically no business in sight from the railroads. The demand from the automobile trade is more quiet than it has been in some time. While the automobile supply business seems to be on a better footing than it was four weeks ago, collections from that source are rather slow. There is a fairly good export demand and the call for mining equipment from Mexico is contributing largely toward the support of that branch of the trade. Foundries that make a specialty of turning out machinery castings are busy and the trade in that line seems to be well distributed. This is largely due to the fact that many machinery manufacturers have, instead of making long time contracts, been giving their orders in small lots, and consequently they have been doing business with several foundries where on other occasions they have placed their entire contract with one casting concern.

J. G. White & Co., Inc., engineers and contractors, 43 Exchange place, New York, have been awarded a contract by the New York, Ontario & Western Railway Company for the erection of railroad shops at the Mayfield yards, Mayfield, Pa., near Carbondale. The work to be carried out consists of the erection of a 10-stall roundhouse, with a 75-ft. turntable; machine shop, carpenter shop, with complete power plant; storehouse, office building, oil building, sand storage, drier and loading house, and a complete coaling station, with a storage capacity of approximately 1000 tons. The buildings will be of the usual type of brick and steel construction. The estimated cost is approximately $150,000.

Sealed bids will be received until October 19 by the Borough Clerk of Allentown, N. J., for the construction of a municipal electric lighting plant. The equipment will include one 25-kw., direct connected three-wired generator, one 30-hp. internal combustion engine, one 15-ampere eight-hour storage battery, switchboard, shafting and other power accessories. Plans and specifications may be obtained from W. W. Young, consulting engineer, who has offices at 220 Broadway, New York, and 1002 Drexel Building, Philadelphia, Pa.

Bids will be received October 5, by the Department of Water Supply, Gas and Electricity of the city of New York, at its offices, 13 Park Row, for furnishing a coal crusher and eight mechanical stokers with coal chutes and other appurtenances for the Ridgewood north side pumping station at Atlantic avenue, Brooklyn.

The W. L. Crow Construction Company, 103 Park avenue, New York, has been awarded the general contract for the construction of an addition to the plant of the American Type Founders' Company on Communipaw avenue, Jersey City, N. J. The company has not yet decided on the equipment to be installed in the structure.

A contract for the erection of a pulp mill of reinforced concrete construction for the Union Bag & Paper Company at Cap de la Magdaleine, Three Rivers, Quebec, Canada, has been awarded to Frank B. Gilbreth, Inc., 60 Broadway, New York. George F. Hardy, 309 Broadway, New York, is the engineer.

The Shaughnessy Knitting Company, Watertown, N. Y., has completed plans for the erection of a knitting mill, 50 x 150 ft., three stories.

The Syracuse Malleable Iron Company has work under way on its new malleable foundry buildings on Geddes street, brick and steel construction, to cost $40,000.

The Railway Roller Bearing Company, Syracuse, is making arrangements for the erection of its manufacturing plant in that city.

The Beaver Company, manufacturer of Beaver board and wall panels, Wm. F. MacGlashan, president, has let contracts for two additional buildings, each 60 x 220 ft., one story, to be erected at its new manufacturing plant, Beaver road and New York Central Railroad, North Buffalo, N. Y.

The Imperial Metal Polish Company, Edw. Fulton, president and manager, has leased a factory building and established its manufacturing plant at Buffalo, N. Y., with offices at 409 Mutual Life Building, that city. The company's specialty will be polishes for automobiles. It will also manufacture stove polishes.

Factory No. 2 of the Salisbury Wheel Company, Jamestown, N. Y., a four-story frame building containing much expensive machinery used for the manufacture of automobile axles, was destroyed by fire September 21, causing a loss of $90,000. The company will in the spring replace the burned building with a large fireproof structure adjoining its factory No. 1, making temporary arrangements meanwhile for carrying on the work to which the burned factory was devoted. The company's power house adjoining, leased to Frederick Sprague and used for street lighting of the suburb of Falconer, was also destroyed and will be replaced at once.

The Menig Sheet Metal Works, 118 Ash street, Buffalo, N. Y., has completed plans for a two-story brick addition to its plant on Ash street, near Genesee street, which it will build and equip this fall.

Bramley Bros. are having plans prepared for an iron foundry building to be erected at Lockport, N. Y., on a 4-acre site in proximity to the new factory of the Simonds Mfg. Company. The members of the firm, Julius W. and John H. Bramley, formerly operated a foundry in Lockport, but for several years past have been operating a foundry connected with the Herschell-Spillman Company's plant at North Tonawanda, N. Y.

The Telechronometer Company of Rochester, N. Y., and the North Electric Company of Cleveland, Ohio, are to be consolidated in a new corporation to be known as the Telephone Improvement Company, which will incorporate under the laws of the State of New York. The new company will manufacture telephone message and time meters and improved switchboard apparatus under patents which it controls. Frederick C. Stevens, State Superintendent of Public Works, is to be president of the new company.

Chicago

CHICAGO, ILL., September 27, 1910.

Dealers report a gratifying improvement during the past week or 10 days in the volume of current business. The general trade is growing slowly and more inquiries are received each week from manufacturers, machine shops and

THE MACHINERY MARKETS

other users of machine tools. Railroad buying is still on a small scale, the only large list which has been closed recently among Western railroads being that of the Chicago, Burlington & Quincy. Other roads are generally buying a few tools at a time for their most urgent needs in their shops. The automobile trade has dropped out of the calculations of the machinery dealers. A year ago the sales to automobile manufacturers were very heavy and represented a large share of the going business, but this fall there have been more orders canceled than new ones received in this line. It has required a considerable growth in the general trade to make up for the loss of so large a line of business, but the market is responding slowly. Some of the dealers report that they have already worked up a satisfactory volume of general trade, although others are not taking such a cheerful view of the situation. Business conditions in the West, however, have turned out very favorable and this will tend to sustain the business of machine tool users. The wheat crop proved much better than early reports indicated, the oats crop broke all records for yield and now the corn crop bids fair to surpass all former years. These favorable agricultural conditions have an irresistible influence in promoting good business conditions in Western territory, and the machinery market is beginning to feel the good effect of returning confidence.

The American Ladder Company, Chicago, is preparing to move its plant and business to Momence, Ill., where it has purchased the property known as the American factory building. The company is enlarging the building by the erection of an addition 64 x 112 ft. and will install a power plant purchased from the Erie City Iron Works. It is expected that the plant will be in operation by January 1.

The Commercial Club of Peoria, Ill., is considering plans for the removal to that city of a factory which manufactures cranes. A definite decision has not yet been reached.

The M. M. Rogers Company, Chicago, manufacturer of journal packing for locomotives and cars, formerly located 234 Sixty-third street, has removed to 900 West Lake street, Chicago.

Lord & Burnham, 829 Rookery building, Chicago, greenhouse designers and builders, have plans prepared for the construction at Des Moines, Ill., of a wood working shop 100 x 140 ft., an iron working shop of the same dimensions and an engine and boiler house 42 x 42 ft. Later on there will also be erected a foundry and boiler shop, plans for which have not been decided upon. It is understood that orders have not been placed for the equipment to be installed.

The International Smokeless Furnace Company, Peoples' Gas Building, Chicago, manufacturer of furnaces for steam and power plants, arches, grates and annealing and tempering furnaces, has increased its capital stock from $15,000 to $50,000. The company has recently completed the installation of new and modern machinery in its plant at 719 Quincy street and is now in position to take care of its rapidly increasing business.

The Hawley Down Draft Furnace Company, Chicago, has sold to the American Steel Foundries for installation in its foundry at Indiana Harbor, Ind., a Schwartz furnace of the largest size which it manufactures.

The Crescent Company, Chicago, manufacturer of the Loxon lamp guard, has changed its name to the McGill Mfg. Company and removed its sales offices from Chicago to Valparaiso, Ind., where it has just completed an addition to its plant. With these increased facilities the company now has a capacity of a half million lamp guards.

S. F. Bowser & Co., Fort Wayne, Ind., have increased their capital stock from $600,000 to $1,800,000. The additional capital will be used for factory extensions and extra working capital, it being the intention of the firm to erect a large three-story addition to their present factory and a six-story office building to take the place of the one now in use. They advise, however, that these improvements will not be made until next year.

The Wayne Oil Tank & Pump Company, Fort Wayne, Ind., has awarded the general contract for the construction of a one-story 60 x 200 ft. and a one-story 40 x 60 ft. brick and cement block factory building, work upon which is now under way.

The Wayne Auto Axle Company, Fort Wayne, Ind., has awarded the general contract for the construction of a one-story addition to its factory, 50 x 140 ft. The company will manufacture automobile axles eliminating the differential gears and is in the market for standard machinery.

The Central Boxboard Company, whose plant at Sterling, Ill., was visited by fire August 31, was not crippled as regards its output and the fire interfered with the operation of the plant only 24 hours.

The Colby Iron Works, Granville, Ill., is preparing to manufacture trolley wheels for electric cars and will be interested in new equipment consisting of turret lathes, milling machines, drill presses and screw machines.

Philadelphia

PHILADELPHIA, PA., September 28, 1910.

While there has been little more inquiry for certain classes of machine tools recently, orders develop slowly, but from the class of prospective buyers, even though their requirements are not extensive, the trade believes that a more healthy market is in sight. Planers, lathes and radial drills figure more numerously in the demand, some of comparatively good size, and while the individual requirements are still rather small, in a few instances the inquiries covering more than a few tools, the outlook is considerably better than immediate business. Few merchants report any sales of consequence, and on the whole the month so far has been a disappointment as far as actual business transacted is concerned. Very little in the way of railroad lists is now expected until after the first of next year. An occasional inquiry and order is received from the roads in this vicinity, but generally these cover odd tools for replacement and minor extensions, and have no bearing on the general situation.

Manufacturers are feeling the absence of new business more acutely. In the majority of instances builders of tools in the Philadelphia territory have sufficient work on hand to keep them fairly well occupied for several months, and, in instances, until the year end; but quite a few have reached the point where they must string out the business they now have to keep them going at a moderate rate during the remainder of the year. The market shows hesitancy; there is a condition of unrest, and the trade generally cannot see far enough into the future to encourage any extensive buying of equipment. The same thing follows as to purchases of materials entering into the construction, not only of tools and machinery, but the crude materials generally.

In the boiler and engine trade business develops slowly, although for general power equipment inquiry shows some betterment. Negotiations for a fair number of engines of moderate horsepower are pending and the trade feels more hopeful as to the future.

The majority of the foundry plants note a smaller demand for castings; in some instances steel casting plants are particularly short of new work. Sharp competition for prospective business is to be noted in all classes of work.

Business in the second-hand machine tool trade continues to drag. Moderate day to day sales are reported, but the market lacks snap.

The city of Belmar, N. J., will receive bids until October 4 for an issue of $18,000 5 per cent. bonds, the proceeds of which are to be applied for the erection of a sewage disposal plant.

The York Mfg. Company, York, Pa., has completed the erection and practically all the machinery has been installed in its new boiler shop. A number of additional improvements are under way by this company, including a plant to manufacture gas for use in connection with its oxyacetylene process for welding purposes.

The Pooley Furniture Company suffered a fire loss of $100,000 by the burning of its warehouse, upholstery and shipping departments on the 20th inst. The manufacturing department of the plant was not effected. It is the intention of the company to replace the burned structure as soon as plans can be prepared with a modern building.

The McCaffrey File Company is having plans prepared and will soon take bids for the construction of a two-story addition to its plant, a considerable portion of which will be used as an extension to its forging department.

The Virginia Bridge & Iron Company, Roanoke, Va., has increased its capital stock from $800,000 to $1,500,000. The issue will be common stock.

Bids are being taken by L. H. Erwell, engineer, for a brick and concrete coal pocket to be erected for the estate of M. Le Rue at Ninth street and Girard avenue. F. J. Bradley, Hale Building, is also understood to be taking bids for a concrete coal pocket to be erected at Llanerch, Pa.

The Steacy-Schmidt Mfg. Company, York, Pa., reports a fair volume of inquiry and has sufficient work on its books to keep both its plate shop and foundry fairly well occupied for some time ahead. It notes a continued hesitancy in the closing up of business under negotiation.

The S. Morgan Smith Company, York, Pa., is making additions to its plant, which when completed will double the present machine and erecting shop capacity and more than double the capacity of the power plant. The buildings for the extensions are under roof and practically completed. Electric cranes will be installed and while a good portion of the power plant equipment has been purchased, a considerable portion of the erecting and machine shop equipment still remains to be purchased. This concern heretofore used considerable outside electric power, but on completion of its new power plant will furnish its own requirements.

The York Engineering Company, York, Pa., is busy

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in all departments and will be fully engaged for several months in order to complete the various orders for power equipment now under way. This company has about completed a power plant for heating and ventilating purposes for the Baltimore Novelty & Enamel Company, Baltimore, Md. Inquiries for considerable work, the installation of which will not be begun until next spring, are now being figured on.

The Treadwell Engineering Company, Lebanon, Pa., has been incorporated with a capital stock of $400,000 under the laws of the State of Pennsylvania and will act as a holding company for the M. H. Treadwell & Co. interests, including M. H. Treadwell & Co., the Lebanon Steel Castings Company, Lebanon, Pa., and the Stoever Foundry & Machine Company, Myerstown, Pa., for which a combined plant is now in course of erection at Easton, Pa. The incorporators of the Treadwell Engineering Company are W. E. Farrell, H. T. Gerdes and Grant Weedman of Lebanon, Pa.

The Reading Crane & Hoist Works, Reading, Pa., notes a steady increase in the demand and a better volume of orders for overhead traveling cranes, tramways, chain hoists and trolleys. That for floor controlled electric hoists is also considerably better. A very satisfactory volume of business is on the company's books, sufficient to keep its plant actively engaged for the next three months. This company has just completed one 16-ton, 57-ft. 16-in. span; one 12-ton, 57-ft. 6-in. span, and one 8-ton, 78-ft. 8-in. span, cranes for the Powell River Paper Company, Powell River, British Columbia. A number of large girder cranes have also been shipped to Canada for use in various power plants; also a number of cranes for the use of the Government in the Philippines for handling submarine mines, cable reels, &c. The general capacity of the plant has recently been increased, giving it an increased productive capacity of 25 per cent.

The Young Safety Razor Company, Eleventh street and Erie avenue, has been incorporated under New Jersey laws, with a capital of $100,000, the incorporators named being Elmer I. Young and Charles V. O'Donnell, Philadelphia, Pa., and Joseph O. Farr, Atlantic City, N. J. The company will manufacture and sell the Young safety razor. It does not contemplate the immediate erection of a factory, but will in all probability equip a plant in the near future for electro plating purposes.

The Elmore Tool Mfg. Company, Hartford, Conn., announces the increased demand for its entire line of Elmore Indestructible tools has necessitated the carrying of a stock in Philadelphia. It has therefore appointed Parker & Haines, 512 Commerce street, Philadelphia, as its sole direct factory representative. All deliveries to the city and nearby trade will be made from this stock.

The Terminal Taxicab Company, 1219 Thirteenth street, Washington, D. C., is planning to erect a three-story concrete garage, 75 x 140 ft., which will be operated in connection with a four-story building the company recently purchased.

New England

BOSTON, MASS., September 27, 1910.

The machinery dealers have had another quiet week. Much importance is attached to the apparently authentic report that the patents and business of the Wonder Worker Shoe Machinery Company, controlled by Thomas G. Plant, Jamaica Plain, Mass., have been purchased by the United Shoe Machinery Company. The report is substantiated by announcements of the laying off of men by the Bresnahan Shoe Machinery Company, Lynn, Mass., and the Stanley plant at Lawrence, Mass., both of which build the machinery of the Wonder Worker Company. If the sale has taken place competition in the shoe machinery business has been seriously affected, and the demand for machine tools has been again concentrated at the Beverly works of the United Shoe Machinery Company.

In Providence, R. I., and vicinity the jewelry manufacturers are busier than for at least two years. The Boston & Maine Railroad's annual report shows an increase in revenue for the fiscal year, due to a large extent to the prosperity of the manufacturing plants.

Further answers to inquiries among the machinery manufacturers as to the status of business affords the basis for a more intelligent estimate of the business situation than can be obtained from conjectures founded within a superficial range of observation. In considering the question it must also be kept in mind that the last three months, during which these opinions were formulated, were normally the lightest of the year because of the season. One builder of machinery which is used in a large way by the automobile manufacturers makes an interesting analysis, following a fiscal year totaling twice the business of that preceding it, and correspondingly greater than anything in the earlier history of the company. He states: "While we had some orders canceled and some put over until a later date, we are sufficiently optimistic, so that we are going to keep all our men going, for the purpose of getting some stock of machines. We have been told many times in the last year or two that people would have been glad to put in our machines, and thought they were the best, but could not wait for our delivery, and this, of course, is an unsatisfactory state of affairs. It hurts us worse than it does to have a man prefer some other make of machine, because those cases will always come up more or less. No one should expect to sell all the machines that are used, but when a customer frankly states that he wants our machine and believes it to be the best one, and has to take something else because our delivery is too far away, we wish to remedy that condition. Still we are human and suppose that if we see a big pile of machines staring us in the face we shall feel like slowing down a little. However, the writer does not expect this to happen. We believe that a large portion of the canceled orders will be reinstated in the course of a few months' time. We do not believe there will ever be the rash and extravagant buying by the automobile people again that there has been for the last two years, but there will always be a demand for good machines, and there will be a continuous balancing up of equipment in the different factories, which will call for a very satisfactory amount of machine tools."

Replies from the large lathe builders of New England are instructive. One says: "Business with us has been very good up to within a couple of weeks, since when it has shown a tendency to drop off. While we are not so sanguine about the outlook as we were last spring, we nevertheless anticipate a good business during the winter." Another opinion from this trade is: "We find business very good and think there are indications of an improvement this fall. At any rate, this is what we are looking forward to and we have no fears for the immediate future, at least." A builder of heavy lathes states: "Business is not as good as we would like to see it, but we are strongly impressed that we are going to have an improvement this fall over the present conditions." Yet another lathe experience is this: "Regarding general conditions at the present time we are extremely busy and we anticipate a satisfactory trade during the remainder of the year." An important house writes: "Business has been very quiet, but it is opening up a little at the present time. Whether it will continue or not is more than I can tell you. We are still running full time and full help, but a great deal of our output is being put into stock."

A manufacturer of planers and shapers says: "Business seems to have a much better tone as far as we have been able to ascertain, and if the troubles of the automobile manufacturers do not overtake the improving tendency of other lines we see no reason why we should not have a fair winter's trade." A manufacturer of friction clutches puts it: "Business is very good with us at present and the outlook is bright." Others write, their lines being indicated: Swaging machines: "We are continuing a fair volume of orders, but we do not feel sure of increased business this fall, except such increase as may be due to the change of season." Gear machines: "Our business is fairly good at the present time, although not up to what it was a few months ago. We expect, however, that there will be a marked improvement within the next two or three months." Riveting machines: "During July and August business has not been very brisk with us. September appears to be coming along better and we anticipate an improvement this fall." Chilled rolls and heavy machinery: "We find that business is falling off and do not look to any improvement this fall." Wire mills, rolls, thread rolling machines, riveting machines, presses, &c.: "If you want a frank expression as to the condition of the machinery market as it affects us, it could not be worse. By this we mean that we are not receiving orders, but are pleased to advise you that we have so much more work on hand, that has been on our books for some months, that we shall be able to coast for some time without serious results." Grinding machinery: "Business at present is very quiet, but we certainly anticipate an improvement in the market for machinery before long." Steam engines: "We anticipate that business will not pick up seriously until after election, and reserve our opinion as to what will occur, until it has occurred." Standard and special wire and metal working machinery: "All during the summer and up to the present, business has been remarkably good. While we do not feel at all pessimistic as to the future, we cannot see that the outlook for the immediate future is very promising." Grinding machines: "Business is very good for this time of year, with very few cancellations of orders. We are anticipating an improved market this fall in our line and are making plans to be prepared for it." Sensitive drills: "Business is very dull now, but we think it will improve a little later." Vertical drills:

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"We are quite busy working on orders, a sufficient amount of which for some time to come we have on hand. While general business seems to have fallen off during the past month, we have been quite fortunate in securing a fair amount of new business. We see nothing except the political situation to interfere with future business."

It has developed that many of the manufacturers of automobile parts and accessories have not suffered nearly as much from cancellations and hold-ups of orders as had been feared. The curtailment in the industry in the purchases of equipment is a serious one, when the orders are compared to the enormous buying of the past two years. But the production of automobiles, both pleasure and commercial, will be very great. Judging from statements occasionally heard some business men do not realize that the motor car as a source of pleasure and convenience is suffering no decline, and that the future of commercial vehicles should be one of consistent, continuous growth. Those automobile manufacturers who have built up their business on substantial foundations do not appear to be very seriously affected.

The Heald Machine Company, Worcester, Mass., manufacturer of grinding machines, has decided to defer the proposed large additions to its shops until next spring, because of general business conditions and also because the bids for construction were considerably higher than had been expected.

The New Haven Sherardizing Company has established works at 1040 State street, New Haven, Conn., and will carry on the business of dry galvanizing under the Sherardizing process. C. L. Ganser is the secretary and manager.

The Board of Boiler Rules of the State of Massachusetts, State House, Boston, has issued a list of boiler manufacturers who are authorized to manufacture Massachusetts standard boilers, together with the approved trade stampings in the style adopted by the board.

John Quinn & Son, Cambridge, Mass., will build an addition to their working shops 38 x 100 ft., three stories.

The Chandler & Farquhar Company, Boston, Mass., dealer in machine tools and mill supplies, has leased a large store adjacent to the present machine tool warehouse, and the machinery office and salesroom will hereafter be at 419-425 Atlantic avenue.

The Berkshire Street Railway Company, one of the New York, New Haven & Hartford properties, will build a power house at Zylonite, Mass., 100 x 150 ft.

That the work of construction of the Boston, Cape Cod and New York Canal will be pushed vigorously is indicated by the purpose to issue $400,000 of new securities, in addition to the $600,000 already disposed of, the proceeds of which have been expended on the property.

The Clark Bros. Bolt Company, Milldale, Conn., manufacturer of carriage, machine and plow bolts, coach screws, washers, rivets, &c., has awarded the contract for a one-story brick factory building, of saw tooth roof construction, containing about 28,000 sq. ft. of floor space. The building will adjoin the company's office and warehouse buildings near the railroad station. It will be used for both storage and manufacturing purposes, the intention of the company being to transfer a part of the manufacturing now done at the old plant, which is located a quarter of a mile from the railroad, thus affording additional room and better railroad conveniences. The business is an old one. It was established in 1854 by William J., Henry H. and Charles H. Clark. The last named founder is still living and is the president of the corporation. The Western office, in Chicago, is managed by Charles Clark, son of Henry H. Clark. E. S. Todd is the secretary and treasurer.

The Dunbar Bros. Company, Bristol, Conn., manufacturer of rings, is completing a new brick and concrete hardening shop, 30 x 50 ft., and is starting work on a power plant which will be pushed to completion as rapidly as possible. These additions, with a three-story building, 32 x 80 ft., just completed, will double the company's manufacturing capacity.

It is announced that the section of the Shore Line Electric Railway between Saybrook and East Lyme, Conn., will be built next spring.

Announcement of additions to general manufacturing establishments of New England include the following: Williams Mfg. Company, Northampton, Mass., new plant, consisting of a main building 80 x 100 ft., with ell 32 x 120 ft., two stories, of reinforced concrete, together with buildings for shipping and storage purposes; Max Henkels, Bridgeport, Conn., addition to factory 60 x 190 ft., one story; Moosehorn Paper Company, Old Town, Maine, tentative plans for a tissue paper plant in that place; Hartford Builders' Finish Company, Hartford, Conn., addition 20 x 40 ft., two stories; Seekonk Lace Company, Pawtucket, R. I., mill building, 52 x 122 ft., just completing, and another addition 32 x 66 ft.; Edwards Mfg. Company, Augusta, Maine, textiles, addition to slasher room, 43 x 55 ft.; C. A. Eaton Company, Brockton, Mass., shoes, seven-story factory, 106 x 236 ft.; Oxford Linen Mills, North Brookfield, Mass., weave shed; Booth Mfg. Company, New Bedford, Mass., new plant, consisting of spinning mill containing 175,000 sq. ft. of floor area, weave shed having 100,000 sq. ft., storehouse, and power plant with 15,000 sq. ft.

The Morgan Construction Company, Worcester, Mass., has been awarded the contract for a merchant mill for the Lackawanna Steel Company and a contract from the Indiana Steel Company for an 18-in. sheet bar mill for the Gary works. The Morgan Company is exceedingly busy in all of its departments and is operating a night shift, following a schedule which has been in practice for some months past.

The Abbott Ball Company, 14-18 Hicks street, Hartford, Conn., has begun the manufacture of a tumbling barrel and steel balls, constituting an equipment designed for burnishing metal goods.

The New Haven Sand Blast Company, Malley Building, New Haven, Conn., has perfected its sandblast tumbling barrel, the invention of G. A. Dreisbach of that city. For the present the machine will be manufactured by outside parties; but the company proposes to establish works later. The barrel is made to revolve slowly, the work tumbling to receive the blast, either of sand or steel balls, from a series of nozzles arranged on the axis of the receptacle. The abrasive material is automatically used over and over again, the machine being entirely self-contained. G. A. Dreisbach is the president and William J. Smith the treasurer of the company.

The G. A. Dreisbach Foundry & Machine Company, New Haven, Conn., manufacturer of gray iron castings and patterns, has decided to go out of business.

The Pratt-Whitney Company, Hartford, Conn., has completed a vertical spindle surface grinding machine of revolutionary proportions. The table takes work 20 in. by 6 ft. The cup wheel employed is 30 in. in diameter. The drive is from a 60 hp. motor. The machine weighs 25,000 lbs. The equipment includes a revolving table, carried on the regular table, and operated with the traverse. The company has just delivered to a customer a measuring machine which measures up to 144 in. or any part of 144 in. to 0.00005 in.

The Eastern Machine Screw Company, New Haven, Conn., is occupying its new shop and has begun manufacturing, though on a small scale, its own screw machines not being completed. The company will manufacture hardware specialties as well as screw machine products, the line including a new type of safety razor. The new screw machine is the design of William H. Gates, vice-president and superintendent. It is of the single spindle type, a characteristic being that the spindle runs constantly in one direction, it being unnecessary to reverse in taking the die from the work. All motions are controlled by cams, all of which are at the back of the machine. There are four slides. It is stated that the capacity is within 75 per cent. of the multi-spindle type. The new shop, 40 x 125 ft., and two stories, will give ample manufacturing space for the industry, and a large tract of land provides for future growth.

The F. B. Shuster Company, New Haven, Conn., has brought out an improved sheet metal straightening and cutting machine containing various new features, including separate control of the rolls and cutting-off mechanism. The machine has a capacity of metal up to 14 in. wide and ⅛ in. thick in lengths as required.

The Providence Engineering Works, Providence, R. I., has decided to defer the erection of its new building until the situation has cleared in the automobile trade. The company has become one of the units of the United States Motor Company, and the increased space is intended for the manufacture of automobile engines and transmission. New machinery is being installed in the present large building, however.

Cincinnati

CINCINNATI, OHIO, September 27, 1910.

The export business is attracting a great deal of attention here, and several machine tool builders who have lately returned from abroad state that Cincinnati tools are fast becoming better known in foreign markets. Orders recently booked call for tools to be shipped to almost every country on the globe. During the past few days local firms entertained a representative of a large Melbourne, Australia, house, who placed quite a number of orders for different kinds of shop equipment. He was followed by a Porto Rican importer, who is also understood to have bought some tools. It is believed that a little concerted action on the part of local manufacturers would bring much better results from the export trade. Manufacturers as a rule look to their export agents entirely to work up the business, not realizing that the average exporter has a multiplicity of

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representations to take care of and is not able to devote much individual effort to further the interests of any particular one.

Domestic business is yet rather slow, but inquiries are numerous, and with the present excellent crop prospects business men generally anticipate very much better conditions for the last quarter of the year. Probably never before have crop reports been followed so closely by the manufacturing interests in this section as they have been this season.

Manufacturers and dealers in machinery and engineering specialties and supplies report a steady business. Second-hand machinery dealers are not faring so well, and some are complaining again. However, this particular business seems to run in waves and its general condition cannot be judged by one week's report.

A. S. Boyle & Co., Cincinnati, have made arrangements to build a two-story brick factory, 80 x 170 ft., at Evanston suburb, which will be used for the manufacture of hardwood finishes.

The Ohio Valley Exposition, which closed its doors September 25, was one of the most successful affairs of its kind ever held in Cincinnati. Large crowds were in daily attendance and out of town visitors were numerous. Many exhibitors are said to have booked sufficient business to pay all expenses for their exhibits. The machine tool exhibitors were especially pleased with the large list of prospective customers they were able to gather.

The Peck, Anderson & Peck Company, Cincinnati, has had to keep its factory on Court street running on a part night shift in order to fill the demand for its heating and ventilating appliances.

The fall term of the University of Cincinnati commenced last week with a large attendance in the mechanical department, which is in charge of Prof. Herman Schneider.

The Continuation School, which has quarters on Ninth street, near Main, Cincinnati, is contemplating opening a night school for the benefit of pupils unable to attend the day sessions. This is a school supported by local machine tool builders for apprentices, who receive full allowance for time while attending the school.

The plant of the John B. Morris Machine Tool Company, Cincinnati, recently mentioned, is nearly completed and will be in operation before January 1.

Foundations for the new storage building of the Ohio Pattern Works, Cincinnati, have been completed and work on the addition will be rushed, as the company desires to get it under cover before cold weather begins.

H. Clyde Gregory, machinery importer of San Juan, Porto Rico, was a local visitor last week. He has lately been appointed Porto Rican agent for the John Steptoe Shaper Company. While here he called attention to the excellent market Porto Rico is for automobiles and accessories; the latter includes the necessary machine tools for doing repair work.

The Rahn-Carpenter Company, Cincinnati, has recently received an order, through its New York representatives, for three of its extension bed gap lathes to be shipped Ardeshrr D. Wadia & Co., Ahmedabad, India. Other export orders include two of its larger sized lathes for Copenhagen, Denmark, and Rotterdam, Holland, also a specially built lathe for a customer in Melbourne, Australia.

George Barkman, architect, Hamilton, Ohio, has in charge plans for the new plant of the H. P. Duescher Company which is to take the place of the old factory buildings recently destroyed by fire.

The new foundry addition to the Niles Tool Works, Hamilton, Ohio, will be 180 x 432 ft., and when completed will very much increase the capacity of the company's present plant.

Rapp, Zettel & Rapp, contractors, Cincinnati, have nearly completed the new factory for the Stroud Machinery Company, on Knowlton street, near the Cincinnati, Hamilton & Toledo Railway. The building is 140 x 225 ft., two stories, and has a saw tooth roof.

The Wayne Oil Tank & Pump Company, Fort Wayne, Ind., has opened a Cincinnati office, with F. W. Stukenborg in charge.

Schumacher & Boye have recently received orders calling for several of their larger sized lathes, and they report many domestic and foreign inquiries for tools of their make.

The plant and storehouse of the Merrie Plumbing Supply Company, 90 Bowen street, Cincinnati, was almost totally destroyed by fire September 25. It is the intention of the management to commence rebuilding as soon as insurance adjustments can be made.

Among recent oil furnace contracts taken by Walter Macleod & Co., Cincinnati, Ohio, are a large plate heating furnace for the J. Baum Safe Company, Cincinnati; complete furnace equipment for the Southern Motor Works, Nashville, Tenn., and a complete furnace equipment for the W. H. Glore Mfg. Company, Washington, Ind.

Cleveland

CLEVELAND, OHIO, September 27, 1910.

While there is steady buying of single tools and small lots the aggregate business placed is rather light. The largest list that has come out in several months appeared during the week, being from the American Steel & Wire Company for its new plant at Corey, Ala. It is expected that this business will be placed within the next few weeks. Other new inquiries are not numerous and are for lots of not more than four or five tools. While September has been a quiet month all through, machinery men did not look for much change in conditions before October. The general opinion prevails that the demand will show an improvement during the coming month. Present buying is very scattered, the orders coming largely from small shops. Railroad orders are still mostly for single tools, the expected lists for additional shop equipment not yet having appeared. In the automobile trade manufacturers are making plans for their 1911 output, and some business is expected from this source as soon as their requirements are decided upon. While it is improbable that the larger manufacturers will buy very much new equipment it is not believed that the large capacity of existing plants will prevent some small manufacturing companies from entering the field. New types of cars are being perfected, in which the promoters have sufficient confidence to invest their capital and put them on the market in a limited number, and a number of small plants are expected to spring up within the next few months.

Local manufacturers in most metal working lines report a good volume of business and the outlook is encouraging. New orders with machine tool builders are light. Only a small number of foreign orders are being received. In the foundry trade conditions continue quite satisfactory. The light gray iron foundries are well filled with work.

The American Steel & Wire Company, through its purchasing department in Cleveland, has issued the following list of machinery requirements for its machine shops in connection with its new plant in Corey, Ala.

One gear head engine lathe, 48-in. by 22-ft., screw cutting, belt driven.
One 30-in. by 28-ft. screw cutting engine lathe, with taper attachment, belt driven.
One 30-in. by 10-ft. screw cutting engine lathe, belt driven.
One 20-in. by 10-ft. screw cutting engine lathe, belt driven.
One 16-in. by 6-ft. screw cutting engine lathe, belt driven.
One 14-in. by 6-ft. screw cutting engine lathe, belt driven.
One 34-in. by 10-ft. screw cutting engine lathe, with taper attachment, belt driven.
One 14-in. by 14-ft. speed lathe with lever feed, belt driven.
One 48 x 48 in. by 14 ft. variable speed planer, two heads on rail, one head on column, motor driven.
One 36 x 36 in. by 8 ft. planer, two heads on rail, belt driven.
One standard 72-in. boring mill with two heads on rail, motor or belt driven.
One horizontal boring mill, 63 in. by 8 ft., diameter of spindle, 5 in., motor driven.
One extra heavy 26-in. shaper, belt driven.
One extra heavy 24-in. shaper, belt driven.
One extra heavy 20-in. shaper, belt driven.
One extra heavy 14-in. shaper, belt driven.
One 14-in. shaper, heavy pattern shape, belt driven.
One No. 4 universal milling machine, belt driven.
One No. 3 universal milling machine, belt driven.
One plain milling machine, same size as No. 1½ Brown & Sharpe, belt driven.
One hand milling machine, same size as No. 2 Brown & Sharpe, belt driven.
One 48-in. spur gear cutter, belt driven.
One 1200-lb. steam hammer, single column.
One roll lathe, 36 in. by 24 ft., with two sets of housings, motor driven.
One necking lathe, 30 in. by 16 ft., motor driven.
One 20 x 96 in. grinding machine, with centers and housings to support roll necks for grinding both chilled and soft wire rolls, motor driven.
One 24-in. turret lathe, capacity 2½-in. bars, with attachment for making studs and mill machine parts, belt driven.
One 18 x 3 in. key seater, belt driven.
One 10 x 1 in. keyseater, belt driven, both for cutting key seats in hubs.
One pipe cutting machine, 2 x 10 in., with cut-off attachment, belt driven.
One pipe cutting machine, 1 to 4 in. capacity, with cut-off attachment, motor driven.
One 36-in. upright drill, belt driven.
One 26-in. upright drill, belt driven.
One 20-in. upright drill, belt driven.
One 30-in. upright drill press, motor driven.
One 16-in. heavy three-spindle drill press for 1¾-in. drills, belt driven.
One 72-in. half universal radial drill with tapping attachment, motor driven.
One bolt cutter, with dies and taps, capacity 2½-in. bolts and nuts, belt driven.
One 15¾-in. slotter to center 63-in. circle, motor driven.
One turret drill grinder.
One No. 8 arbor press.
Two 48-in. down draft forges.
One pressure blower, 8-in. outlet, belt driven.
Five double emery wheel bench stands, with 1¼-in. spindle with countershafts, belt driven.
Four double emery wheel bench stands, for wheels with 1¼-in. face spindles, 1¼-in. in diameter, with exhaust attachment, belt driven.

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Two heavy power hack saws, belt driven.
One No. 4 exhaust blower.
One No. 4 pressure blower, belt driven.
Two grindstones, belt driven.

The National-Acme Mfg. Company, Cleveland, Ohio, has commenced the erection of a new plant in Montreal, Canada, and has about completed the building of a four-story addition to its Cleveland plant, 40 x 185 ft. This latter will be used for store and stock rooms, case hardening department, &c., and will enable the company to make considerable rearrangement of its present plant. Practically no new machinery equipment will be required. The company reports that it is still well filled with orders and that its plant is running at full capacity.

The Columbia Planter Company, Springfield, Ohio, has purchased a 3-acre site on East street, in that city, and plans to begin at once the erection of a new plant, 65 x 200 ft., for the manufacture of grain planters. The officers of the company are C. E. Patric, president and treasurer; Benjamin Beal, vice-president; J. J. Veasie, secretary.

The Cleveland Worsted Mills Company will build an addition to the boiler room of its Cleveland plant, plans for which have been prepared by Geo. S. Bider & Co., engineers, Cleveland. The plans provide for 2,000 hp. in boilers, contracts for which have not yet been placed. The building will be of brick and steel and will be equipped with coal bunkers.

Sealed proposals will be received by the Board of Trustees of the Athens State Hospital, care the Osborn Engineering Company, Room, 420, No. 20 Broad street, Columbus, Ohio, October 22, for a 22 x 80 ft. stand pipe, two 150-hp. horizontal tubular boilers and a system of steam and water piping for improving the water supply at the state hospital at Athens, Ohio.

The Bower Roller Bearing Company, which has been operating a plant in North Dayton, Ohio, has been dissolved, having sold out to a Michigan company of the same name, which is building a new plant in Detroit. The equipment of the Dayton plant will be moved to Detroit in December.

The Ohio Blower Company, Cleveland, which will largely increase its capacity by the erection of a new plant, has increased its capital stock from $50,000 to $150,000.

The Dayton Sure Opener Company, Dayton, Ohio, has been incorporated with a capital stock of $25,000, to manufacture hardware specialties. The company has established a plant in the Beaver power building. The officers are: J. V. Brumbaugh, president; F. M. Riethmiller, secretary and treasurer, and F. G. Feitshans, general manager.

Satisfactory reports regarding business conditions are made by the Standard Tool Company, Cleveland, maker of drills and reamers. Orders are coming in in fair volume and this company has kept its plant running full during the entire summer.

The Cuyahoga Mfg. Company, Cleveland, has been incorporated with a capital stock of $10,000 by William T. Bonnell, J. E. Rawson and others. The company plans to make a wire inner tube for automobiles and may establish a manufacturing plant.

Extensive additions and improvements have caused the Royal Rubber Company, Akron, Ohio, to take steps to increase its capital stock from $50,000 to $200,000. A meeting of the stockholders will be held October 22 to take action on the proposed increase.

The Wright Aeroplane Company, Dayton, Ohio, has commenced the erection of a manufacturing plant, 52 x 232 ft., of brick, steel and concrete construction. Other buildings will be added as the business grows.

On the application of A. H. Reeves, president of the Acme Boiler Company, Canal, Dover, Ohio, that company has been placed in the hands of Albert Graber as receiver. It is claimed that the company is insolvent.

The Defiance Machine Works, Defiance, Ohio, has added to its plant a two-story brick warehouse, 66 x 132 ft., which will be used for the storage of finished machines. The company has also replaced all of its out of date machines with new equipment, and is making arrangements to erect an L-shaped factory building, 50 x 182 ft. and 50 x 80 ft. This structure will be equipped with all the latest foundry appliances and the company expects to erect in the spring.

The Tyson Company, Canton, Ohio, has been incorporated with $75,000 capital stock, to take over the business of the firm of Tyson & Co., manufacturers of dairy appliances and ice cream machinery. The company is figuring on erecting a new plant during the spring of 1911, plans for which have not been worked out.

The Falls Rivet & Machine Company, Kent, Ohio, has been incorporated with $150,000 capital stock by Edwin Seedhouse and C. A. Weidner.

The County Commissioners of Cuyahoga County have finally decided not to build a power plant in connection with the new court house in Cleveland, for which bids were received some time ago. A contract has been closed with the Cleveland Electric Illuminating Company for the light, heat and power for the building.

Pittsburgh

PITTSBURGH, PA., September 27, 1910.

An increase in inquiries for machinery has been noted during the past week by some of the leading manufacturers and dealers of this district, with a somewhat heavier percentage of bookings than formerly. The improvement in industrial conditions is, nevertheless, not yet sufficiently general to warrant any strong statement on the subject, and in some quarters the immediate prospect is not regarded as very hopeful.

The principal difficulty seems to be that there is no snap to the market. Purchasing continues to be done piecemeal, as material or equipment are needed, rather than on the usual contract basis; and it is very little, if at all, in advance of actual requirements.

While buyers, however, hold to a waiting attitude, the same is true of the various sales departments and offices, whether representing large interests or small. There has been no disposition this fall to force the marketing of machinery or related lines of equipment, and prices are well maintained. A remarkable feature of the latter is, in fact, their uniformity. This can be plainly seen in the published bids on machinery for municipal power, pumping and filtration or sewage plants. Here the figures of competing manufacturers and contractors run very close together, even though originating in widely separated parts of the country. Exceptions to this occur, of course, but they have not been sufficiently numerous to more than prove the rule.

Taken altogether, the situation of current trade is such that it will respond quickly to any stimulating influence and yet would retrograde from its present position only under very strong pressure. Many believe that the market will hold about where it is until after the Congressional elections. Beyond that point few venture to prophesy.

Arrangements for the construction of a seven-story factory building, 95 x 154 ft., have recently been made at New Brighton, Pa., by the Standard Sanitary Mfg. Company, Pittsburgh.

Among orders from Mexico which are now being filled by the Westinghouse Electric & Mfg. Company, Pittsburgh, is one for a line of 40 induction motors to be installed in the ore reduction plant of the La Blanca & Anexas Mining Company, Pachuca, Hidalgo, Mexico, together with auxiliary apparatus.

The Duquesne plant of the Bessemer Coal & Coke Company at Bradenville, Pa., which has stood idle for a long time, is to be improved and operated again.

The Pittsburg Filter Company, Pittsburgh, will furnish two low service pumps and other equipment for the new water works system at Macomb, Ill.

Work is about to start on a new two-story shop building, 60 x 215 ft., at East Pittsburgh, Pa., for the Westinghouse Air Brake Company, the plans for which were recently completed by Miller & Milligan, Wilkinsburg, Pa. This will give the company additional facilities that are much needed at the present time.

The Platt Iron Works, Dayton, Ohio, has the contract for a pumping unit to be installed in connection with a filtration plant for Miles City, Mont.

Motors will be used for operating the machinery in the works of the United States Glass Company, Glassport, Pa., an addition to which is now under way, and current will be purchased from the Allegheny County Light Company, Pittsburgh.

The Pittsburg Testing Laboratory Company, Pittsburgh, whose need of increased facilities was recently mentioned, has let the contract for a new building.

The Erie City Iron Works, Erie, Pa., is filling a large order for boilers to be installed in the new city power and pumping plant at Clarksburg, W. Va., and has on its books numerous other contracts from municipalities in various parts of the country.

A new quarrying and crushing plant has been established by the Capital Stone Company, Columbus, Ohio, in which Felix Jacobs of the Kilbourn & Jacobs Mfg. Company is interested. As the property is developed considerable additional machinery will undoubtedly be required. The rock breaker already installed has a capacity of 800 tons daily.

Manufacturers of this vicinity will furnish equipment for a new two-story factory building, 120 x 510 ft., which the Angldile Mfg. Company, Elkhart, Ind., will use in the production of scales. Work on the plant has already started.

Some improvements are to be effected in the handling facilities of the United States Coal & Coke Company's plant at Gary, W. Va., including the replacement of wooden with steel tipples.

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Geo. S. Comstock, Mechanicsburg, Pa., is making numerous sales of his patented inclosed self-oiling air compressor, which is very compact and efficient for its size. It can be belted to any existing source of power or direct driven from a motor.

The Crestline Mfg. Company, Crestline, Ohio, has developed a pump for moderate capacities, which can be belted to an engine or other source of power and used to excellent advantage in factories or for any similar industrial service.

The Russell Machine Company, Twenty-eight street and Allegheny Valley Railway, Pittsburgh, has purchased 10 portable boilers, from 40 to 90 hp., and 10 hoisting engines, double cylinder from 30 to 60 hp. with about 48-in. drives, from the Conneaut Dock Company, Conneaut, Ohio, which will be sold in whole or part. Recent sales made by the concern include the following: Ellwood City Forge Company, Ellwood City, Pa., lathes, radial drills and cold saws; Pittsburgh Printing Company, Pittsburgh, 75-hp. Brighton gas engine; Keystone Tube Company, Connellsville, Pa., an 18 x 24 in. Atlas automatic engine; Perry Mfg. Company, Perryopolis, Pa., a 150-hp. Babcock & Wilcox water tube boiler.

The W. W. Patterson Company, 55 Water street, Pittsburgh, manufacturer of Patterson tackle blocks, either wood or steel and for manila or wire rope, reports that its business over the last four months shows an increase over each preceding month and its current business on heavy iron and steel tackle blocks is good. Its product is extensively used by the Carnegie Steel Company, Riter-Conley Mfg. Company, McClintic-Marshall Construction Company, American Bridge Company and other structural and bridge interests.

The S. Keighley Metal Ceiling & Mfg. Company, Locust street, Pittsburgh, has been awarded a contract for 192 Phoenix steel lockers, by the Pittsburgh & Lake Erie Railroad, for use in its club room at Haselton, Ohio.

The Bruce-Macbeth Engine Company, Cleveland, Ohio, builder of vertical multi-cylinder gas engines, announces that its rapidly increasing Pittsburgh business has made it necessary to open an office there. It is located at 1537 Oliver Building, and is in charge of W. N. Richey as local manager.

Detroit

DETROIT, MICH., September 27, 1910.

Manufacturers of automobiles, motor-wagons, trucks and parts are becoming increasingly active in the purchase of equipment, although their inquiries lately have been so scattered as to exert little apparent influence upon the market as a whole. For plants in which gasoline engines are the principal product, whether to be used in automoblies, with farm machinery, contractors' outfits or in general industrial service the tendency towards further expansion of shop facilities is especially pronounced. This is true not only among the manufacturing centers of Michigan, northern Ohio and Indiana, but also through the country at large, which looks to this section for much of its equipment in the line mentioned, owing to the experience that has been developed here. During the summer all of the large gasoline motor plants were much visited, and a great deal of information now being utilized elsewhere was picked up in these tours of local shops. In many cases the manufacturers who came here from a distance were invited to do so by leading machinery houses, and salesmen from the latter accompanied them on their rounds, with the result that tools seen in operation were mutually noted and subsequently ordered duplicated for the visitors' plants.

Sales of equipment for iron, steel, brass and aluminum foundries, which were expected to follow the lead of last spring, have been disappointingly small; but a number of manufacturers, jobbers and dealers have been doing fairly well in this line. The foundries themselves are also busier than they were in August, and before the approach of winter many of them will undoubtedly be in the market for considerable material.

The requirements of other metal working plants are comparatively light. The support of the entire market at present is chiefly from the general manufacturing field, where the production of staples of all kinds has become heavy.

The organization is reported here of the Crucible Steel Castings Company, Detroit, which has been incorporated for $10,000 by R. A. Bailey, Grace M. Bailey, L. A. Rosier and B. H. Mark.

The Marquette Commercial Club, Marquette, Mich., is reported to be back of a project to establish an automobile factory in that city, with a view of getting considerable of the business of the upper peninsula, where motor cars are now being extensively used for all purposes.

The construction of a new sawmill equipped with heavy machinery is being planned by the Hunter & Love Lumber Company, Newberry, Mich. It will be located at some distance from that place.

Geo. A. Marsh and Wm. L. January, Detroit, have organized the Buchanan Aeroplane Company.

The Northern Engineering Works, Detroit, has installed one of their three-motor traveling cranes, with 41-ft. span, in the plant of Adam Groth & Co., Joliet, Ill.

The Banting Machine Company, Toledo, Ohio, is about to add to its facilities for the manufacture of agricultural implements. The plans include a new building.

The Hudson Motor Car Company, Detroit, has increased its capital stock from $100,000 to $1,000,000.

A new boiler of larger capacity than the one now in service is being installed by the New Baltic Copper Company, Houghton, Mich., and an air compressor has been ordered. Additional machinery will be needed later on.

The Toledo, Port Clinton & Lakeside Railway, Toledo, Ohio, is installing automatic stokers in the furnace room of its engine-driven generating plant at Port Clinton, Ohio, originally equipped by the Allis-Chalmers Company, Milwaukee. The boilers were furnished by the Erie City Iron Works, Erie, Pa., and the new stokers are from the shops of the Underfeed Stoker Company of America, Chicago, Ill.

The electric power and lighting plant at Bronson, Mich., will be purchased by the community and improved.

No pumping machinery will be required this year for Grandville, Mich., as proposed, for the reason that a bond issue to cover the expense has been defeated.

The plant of the Lloyd Mfg. Company, Menominee, Mich., is to be doubled in the near future, and considerable additional equipment will probably be required.

It is probable that the woodworking plants of Forster Bros. Company, Munising, Mich., including a sawmill, which recently burned, will be rebuilt along somewhat different lines, but no definite decision in the matter has as yet been arrived at.

Machinery will be required within the next few months for two new buildings, 50 x 200 and 40 x 100 ft., to be added to the plant at Goodwillie Bros., Manistique, Mich.

The Wolverine Furniture Company has been organized at Holland, Mich., to operate a manufacturing plant.

Work has been started on the boiler making and repair plant of the new Lake Shore & Michigan Southern Railway shops at Elkhart, Ind., which will be 123 x 490 ft. This is the first of the units to be constructed.

It is reported from Houghton, Mich., that the Calumet & Hecla Company is planning the remodeling of its Osceola stamp mill. The underground pumps are also being gradually replaced with new motor driven units, supplied with power from the company's 7500-kw. electric plant at Lake Linden, Mich., and further changes of a similar nature will be made, necessitating the purchase of considerable equipment within the coming year.

It is reported from Bay City, Mich., that the M. Lamont Company has had plans drawn for a large new plant.

The Tittabawassee Power Company, Bay City, Mich., is stated to be arranging for the construction of one of the largest hydroelectric power plants in this part of the country.

The Board of Trade, Saginaw, Mich., through its Committee on New Industries, has been conferring with a representative of the Seeley Auto Engine Company relative to the establishment of a manufacturing plant there.

The Elmore Mfg. Company, Detroit, is preparing to treble its output for the coming year.

A new factory building is to be erected here this fall by the Michigan Crank Shaft Company.

It is stated that the Solvay Process Company, Detroit, will purchase, shortly, 50 heavy gondola cars for its own use.

From Wickenburg, Ariz., it is reported that the United States Sulphide Smelter Company, Toledo, Ohio, has been awarded the contract for the complete equipment of a new smelting plant to be erected there by the Monarch Mining Company.

A new power house of brick and steel construction is being completed for the Lake Copper Mining Company, Houghton, Mich., and the installation of boilers and an air compressor will be undertaken shortly. The hoisting units which it is planned to provide will not be required for some time yet.

The new foundry of the Dake Engine Company, Grand Haven, Mich., besides filling the company's own requirements, will undertake considerable custom work. It is equipped for the manufacture of both gray iron and brass castings, having the most modern facilities for efficiently and promptly turning out these parts.

The Hancock Mfg. Company, Charlotte, Mich., manufacturer of brass goods, has increased its capital stock from $30,000 to $100,000. The company will make extensive improvements, details of which have not been worked out.

The Michigan Pressed Steel Company, Ypsilanti, Mich.,

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manufacturer of sheet metal goods of all kinds, is erecting a new manufacturing building 60 x 200 ft., one story, which is now nearing completion. Practically all equipment to be installed has been purchased.

The City Council of St. Charles, Mich., will expend $14,000 for the construction of an electric light plant.

The Culver-Taylor Chain Works, 140 Madison avenue, Detroit, Mich., recently incorporated with $50,000 capital stock, will make wheel sprocket and transmission chains. The company now has in operation a toolroom and is in the market for punch presses, screw machines and crude oil furnaces for case hardening.

The Severance Tank & Silo Company, Lansing, Mich., is negotiating with the Lake Shore Railroad with a view to a lease of land along its tracks upon which it is contemplating the erection of a large new plant.

Plans have been completed for rebuilding the railroad car shops of the South Shore Railroad at Marquette, Mich., which were recently destroyed by fire. The new shops will be of larger size than the old, and it is understood that the work of construction will be commenced at once.

Indianapolis

INDIANAPOLIS, IND., September 27, 1910.

The Terre Haute, Indianapolis & Eastern Traction Company has plans prepared for the construction at Indianapolis of a power house to be erected in two sections, 94 x 160 ft. and 121 x 193 ft., which will be equipped with the following equipment: Two 8000-k.v.a., 13,200-volt, three-phase, 25-cycle Westinghouse Parsons turbines; two 25,000-sq. ft. Wheeler condensers, two 2000-kw. Westinghouse rotaries, 12 520-hp. Babcock & Wilcox boilers, with Roney stokers. The chimneys on the power house will be 18 x 295 ft., of radial brick construction, and will be built by the H. R. Heinicke Company of New York City.

The Ideal Mfg. Company, Anderson, Ind., advises that it will probably install some small size high speed drill presses in the near future.

The Cartwright-Stevenson Mfg. Company, Indianapolis, has been incorporated, with $10,000 capital stock, to manufacture mechanical specialties. The directors are E. E. Cartwright, C. E. Stevenson and A. J. Cartwright.

The Phillips Demountable Rim Company, Indianapolis, has been incorporated, with $30,000 capital stock, to manufacture vehicles and vehicle parts and attachments. The directors are James N. Crabb, William A. Zumpfe and John F. Messick.

The Electro Lighting Company, Indianapolis, has been incorporated, with $100,000 capital stock, to manufacture electrical machinery. The directors are William H. Harbison, S. C. Renick and C. C. Wedding.

The Bucyrus Vulcan Company has been incorporated at Evansville, Ind., with $600,000 capital stock, to manufacture excavating machinery. The directors are George F. Steedman, W. W. Coleman and H. P. Wells.

The Westcott Motor Car Company of Richmond, Ind., has increased its capital stock from $100,000 to $250,000. B. J. Westcott is president of the company.

The Kokomo Public Utility Company has been incorporated at Kokomo, Ind., with $10,000 capital stock, to operate a public utilities company. The directors are John B. Carter and L. J. Kirkpatrick of Kokomo and George J. Marott of Indianapolis.

The City Council of Connersville, Ind., has accepted bids for $20,000 of work on a new water works system which is to cost $40,000. Bids for the remainder of the work are held over.

The Riverside Electric Company, Lagrange, Ind., has been incorporated with $10,000 capital stock, to supply municipal lighting. The directors are J. C., W. H. and A. L. Cain.

Leo M. Rappaport has been appointed receiver for the Indianapolis Machinery Exchange of this city. The assets are placed at $20,000; liabilities at $8000.

The Fletcher Enamel Company, Anderson, Ind., has increased its capital stock from $50,000 to $75,000. U. G. Fletcher is president of the company.

New chilled grind departments and new paint shops are to be the latest additions to the plant of the Oliver Chilled Plow Works, South Bend, Ind. The former will be 240 x 300 ft. and the latter 80 x 340 ft. The improvements will permit an increase of the company's working force to 5000 men. It is expected the branch factory at Hamilton, Ontario, Canada, to cost $1,500,000, will be completed by January.

The plant of the American Car & Foundry Company at Jefferson, Ind., has begun shipping on a large contract of steel freight cars for the Chicago, Milwaukee & Puget Sound Railway Company. The cars are 60 ft. long and have the doors toward the front and back of the cars instead of in the middle.

The Bedford Stone & Construction Company, Traction-Terminal Building, Indianapolis, has secured the contract for an eight-story modern building for the William H. Block Company, dry goods merchant. The contract price is $450,000. It will be fireproof, 120 x 195 ft. It will have six passenger elevators, two freight elevators and a sidewalk lift.

The Bedford Foundry & Machine Company, Bedford, Ind., has been incorporated, with $100,000 capital stock, by E. A. Sohn, Joseph Krementz and Charles Sohn.

The City Council of Terre Haute, Ind., is considering the question of establishing a municipal electric light plant at a cost of $800,000, according to plans prepared and furnished by George C. Morgan, consulting engineer, 169 Jackson boulevard, Chicago.

The Sullivan Bridge & Supply Company, Sullivan, Ind., is erecting a one-story 48 x 72 ft. steel factory building and a one-story office building, 25 x 50 ft., which are expected to be ready for occupancy by December 1.

The Cole Motor Car Company, Indianapolis, has increased its capital stock from $100,000 to $300,000. The additional stock will be sold to present stockholders only. The output this year was 900 cars and contracts are in for the full output of 1911, which will be 2000 cars. President J. J. Cole says: "It is true, of course, that a few of the large automobile builders overproduced for the season of 1910. This has engendered conservatism and will result in a healthier condition than has prevailed the present year. One of the surest ways to correct the tendency toward 'wildcatting' in the automobile business is the stand taken by bankers, which will make it necessary for the manufacturer to sell to responsible dealers, who will contract only for a number of cars they can reasonably expect to sell."

Contracts have been awarded for new buildings for the Anderson Knife & Bar Company, at Anderson, Ind., to take the place of those recently destroyed by fire. The main building will be of brick and cement, 36 x 300 ft.

The De Witt-McIntyre Gear & Bending Works of Oakland City, Ind., has changed its name to the H. H. De Witt Company.

Milwaukee

MILWAUKEE, WIS., September 26, 1910.

A canvass of manufacturing plants in the leading industrial centers of Wisconsin shows a fair percentage of them running practically full time, and some factories are even crowded with work. Sales forces are being increased. Contracts long pending in various parts of the country are on the point of being closed, and the prospect files of machinery houses have recently been very carefully gone through, with the idea of following up business that was scheduled for fall or early winter. Power plant equipment, mill and woodworking machinery are among the best sellers at present, but factories in many diverse lines will be in need of a great deal of apparatus of all kinds during the next few months, and it is the future of this class of trade to which most attention is being devoted now. Metal working industries, strictly speaking, have not yet developed the purchasing power that was anticipated for this season of the year, and from present indications their requirements will be somewhat under normal all through the autumn months.

From the interior of the State there is considerable demand for second-hand machinery, particularly for equipping the small shops and factories that have sprung up within the past quarter. In the larger manufacturing cities, including Milwaukee, the tendency is in the opposite direction, very little machinery being considered that is not strictly modern and of the most improved type. The products of local establishments are also given preference to a greater extent than ever before.

As a consequence of the growth in its business and the shop and foundry facilities that have been added the Nordberg Mfg. Company, Milwaukee, has increased its capital stock from $1,225,000 to $1,550,000. The products of the company have been widely sold this year, often at a premium for proven economy in operation, and its prospects for the future are notably good.

While in Europe, Theodore O. Vilter, of the Vilter Mfg. Company, Milwaukee, will investigate the practical workings of industrial insurance in the countries where it has been tried.

The Allis-Chalmers Company, which has always devoted a great deal of attention to the training of apprentices in its foundries, machine shops and erecting departments, will still further perfect the system, having en-

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gaged Geo. L. Sprague, who had similar work in charge at the Dunkirk, N. Y., plant of the American Locomotive Company, to superintend the company's activities in that line.

A Corliss engine, 12 x 36 in., and a number of electric motors, blower, &c., will be required for the new plant which is to be occupied by the O. O. Storle Valve Company and the Willow Grass Rug Company, Green Bay, Wis. Other equipment, including a boiler, has already been secured.

The Gateway Steel Tank Company, La Crosse, Wis., has been awarded the contract for all of the sheet metal work on the new Federal building at La Crosse, Wis.

The enormous new ore reduction works of the New Jersey Zinc Company at Mineral Point, Wis., are now well under way, the brick work for the furnaces being in course of erection and two of the large ore bins completed.

The Bayley Structural Iron Company, Milwaukee, will furnish all of the ornamental iron work for the new city hall at Kenosha, Wis.

A test was made last week of the new gasoline traction engine invented by Geo. W. Morris, Racine, which pulled 10 Deere plows, each 14 in. wide, turning over a strip of land 140 in. wide and from 6 to 8 in. deep. It is reported that Mr. Morris, who was formerly superintendent of the J. I. Case Threshing Machine Company's works, will organize a company to manufacture the machine.

Advices from Sheboygan, Wis., which have not been directly confirmed, are to the effect that a high pressure pumping unit for fire protection service will be purchased by the Northern Furniture Company of that city.

A bond issue of $50,000 to provide funds for the construction of a municipal power and lighting station, will be voted upon in La Crosse, Wis., November 8.

The United States Government has contracted for motors to be installed in the wood testing and forestry experimental plants at Madison, Wis. They will be furnished from the works of the Sprague Electric Company, New York City.

The Gardner Machine Company, Beloit, Wis., will operate its new plant throughout by means of electric power, but will not install generating units, as satisfactory arrangements have been made with the local central station to supply current for the purpose. All of the motors needed for the present have been purchased.

A small motor driven pump is to be purchased in the near future by the city of Mineral Point, Wis.

A new box factory is to be built at Merrill, Wis., by John Heib.

Machinery for the new factory of the S. W. Miller Piano Company, including motors for electric drive, will not be bought for about three months. Arrangements for power will probably be made with the Sheboygan Light, Power & Railway Company.

The Crown Commercial Car Company, Milwaukee, has been organized to succeed the Meiselbach Manufacturing Company, which has a motor-truck factory at South Milwaukee. This represents principally a change of name, as the interests composing the two companies are practically identical.

The details of the power equipment of the new buildings of the Jacob J. Vollrath Mfg. Company, Sheboygan, Wis., have not yet been decided upon. Motors will probably be required, but it is uncertain, as yet, how far the electric system will be introduced.

Construction work will start early next month on a new office building for the Gisholt Machine Company, Madison, Wis., which is to be furnished with a steam heating plant independent of that supplying the shops.

Wisconsin manufacturers of hydro-electric machinery will probably be asked in the near future to submit plans and estimates for a power plant to be built by the Sterling-Moline Traction Company, Sterling, Ill., on the Rock River, near Lyndon, Ill.

A large contract for hydrants and valves to be used in remodeling and extending the water-works system at Waterloo, Wis., has been let to the Bourbon Copper & Brass Works Company, Cincinnati, Ohio.

It is reported that the Chicago, Milwaukee & St. Paul Railway Company has decided upon the construction of a water supply station at Corliss, Wis., including the erection of an elevated steel tank of 100,000 gal. capacity and the installation of a deep well pump.

The Filer & Stowell Company, Milwaukee, has in hand the contract for the complete machinery to be installed in a large new mill at Judson, N. C., of the Whiting Mfg. Company, Asheville, N. C., which will be the most modernly equipped of any in that section.

Contracts for the construction and equipment of a new power house, 40 x 50 ft., have been let by the Beloit Iron Works, Beloit, Wis. Boilers will be furnished by the Reliance Boiler Works, Oshkosh, Wis., an engine by the C. & G. Cooper Company and generator by the General Electric Company.

Additional concentrating machinery for zinc ore is being installed by the Peaceful Valley Mining Company, Cuba City, Wis.

The Cedarburg Box & Woodwork Mfg. Company has been organized to establish a factory at Cedarburg, Wis.

The Allis-Chalmers Company, Milwaukee, is working on the contract for the full equipment of the new mill which Lee Wilson & Co. are building at Wilson, Ark. This is notable not only for the thoroughly modern character of the machinery to be installed, but also for the fact that the buildings are of steel construction, a relatively new feature of sawmill practice.

More coal handling machinery will be needed within the coming year by the C. Reiss Coal Company, Sheboygan, Wis., in connection with new docks to be erected adjacent to to its present property.

The S. Freeman & Sons Company, Racine, Wis., has been awarded the contract for boilers to be installed in the new factory of the Kelley-Racine Rubber Company of that place.

Bids are to be taken shortly on a power plant, sprinkler system, &c., for the new six-story factory to be erected by the Phoenix Knitting Works, Milwaukee, the contracts for the construction work on which are about to be let.

A contract has been given the Wisconsin Bridge & Iron Company, Milwaukee, by the Menasha Woodenware Company, Menasha, Wis., covering the steel frame for a dry kiln to be operated in connection with its factory.

Arrangements have been concluded by the Mitchell Lewis Motor Company, Racine, Wis., for building a new boiler house, 48 x 65 ft.

The Christensen Engineering Company, Milwaukee, has made notable progress this season in the sale of its Badger type of gasoline engine, which is manufactured in sizes up to 65 hp. for stationary or portable service. A feature of this machine is the fact that all valves are in a vertical position, assuring even wear to the stems and perfect seating to the heads, and that they have been placed in removable cages, rendering them easily accessible without taking off the cylinder head. Other details, which are perhaps equally important, combine to make a very high grade machine of its class.

The Albert Trostel & Sons Company, Milwaukee, tanners, is rebuilding its four story building which was recently destroyed by fire. It will also construct an additional building 118 x 148 ft., one story, which will be equipped with dry kilns.

St. Louis

ST. LOUIS, MO., September 26, 1910.

Business has been rather quiet the past week in the way of orders placed, although there is considerable in prospect. Some machines have been sold for delivery in the neighborhood of New Orleans, and one dealer mentions the sale of a heavy machine for the St. Louis district.

The formal opening of the Illinois Traction System's new $3,500,000 bridge across the Mississippi, which is set for the middle of October, will give St. Louis superb service for both passengers and quick freight to all points on the Illinois Traction System, aggregating something over 600 miles of main line. This company is erecting a 12-story terminal building in the heart of the new retail district.

The big Western trunk lines radiating from St. Louis are making extensive improvements in their permanent way work and are going in for electric block signals quite heavily.

The inauguration of the through service to the Pacific Coast by way of the Missouri Pacific, Denver & Rio Grande and Western Pacific properties is bringing much new traffic through this gateway.

The National Clock & Electric Company, which makes a specialty of advertising clocks and dial thermometers for cooking stoves, &c., is preparing to remove into its large new plant in the new factory district on the outer belt line, and has been placing some orders for screw machines, drop hammers, sheet metal working machinery, &c.

The reorganization of the St. Louis Car Company seems to be about accomplished now and it is expected to have this big plant, which normally employs about 5000 men, going ahead in good shape soon.

The C. J. Shea Realty Company announces that a contract has been let to the Jenkins Construction Company to remodel the building at the corner of Eighth and Howard streets into a four-story factory for the T. L. Horn Trunk Company, now at 314 South Main street.

Joe Smith & Co. and L. J. Cohen & Co. of Kansas City, Kan., and A. Rubenstein of Kansas City, Mo., joint creditors of the Kansas City Foundry Company, have filed an application in the United States District Court asking that the latter company be declared insolvent and a receiver appointed.

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The Garrison Mining Company, Webb City, Mo., has just installed a 100-hp. boiler and a 6-in. centrifugal pump and gas engine. Dexter & Co. are putting in a similar plant, and as soon as the ground is drained mining will begin. Both companies propose to build a mill.

The plans and specifications for the new shoe factory at Marshall, Mo., have been approved by the Citizens' Committee and put into the hands of the contractors.

George Joslin, Cassville, Mo., will erect an ice factory and creamery. The creamery will be of sufficient capacity to take all the butter fat in southwest Missouri and north Arkansas. The ice plant will be 5 tons daily capacity and will be built so that additions can be made to increase its capacity.

The city of Nevada, Mo., has granted a franchise for natural gas to W. C. Gunness of Fort Scott, Kan. The gas will be piped from Fort Scott.

The East St. Louis Oil & Gas Company of East St. Louis, Ill., has been incorporated. Capital stock, $20,000. The incorporators are R. J. McMurda, J. M. Harris and W. F. Rothe.

The Board of Public Improvements, St. Louis, Mo., will receive bids until October 7 for furnishing designs and plans for approval and furnishing and delivering and erecting in place at high service station No. 2 one 30-ton electric traveling crane, complete with all appurtenances, and for furnishing complete at the same station a steel crane runway and columns, with all necessary connections.

The Moline Pump Company, Moline, Ill., will remove to Ottumwa, Iowa, within 30 days. The Commercial Association of Ottumwa is raising a fund amounting to $20,000 as a bonus to this new company.

R. S. Walters & Co. have commenced the operation of a candy factory at Clinton, Iowa. The factory is located at 412 Front street.

The D. A. Chalmers, Washington, Iowa, grain elevator was destroyed by fire recently, the building having been struck by lightning. Both the building and contents were partially covered by insurance.

The Des Moines Clay Mfg. Company of Des Moines, Iowa, has increased its capital stock from $35,000 to $150,000. About $115,000 will be expended in enlarging the plant of the company on South West Seventh street.

The Fort Madison Reliable Foundry property, which has been the object of bankruptcy proceedings, has been sold at auction to Harvey J. Briggs of Quincy, Ill., for $9005.23.

The city of Audubon, Iowa, is advertising for bids, open until October 3, for the furnishing of all labor and material and doing all work necessary for the construction of a stand pipe upon a foundation about 23 ft. in diameter and 20 ft. high, of brick.

E. Buxton, R. Sloan, Charles Edwards and M. Gwundler, owners of the mines recently opened at Cave Springs, near Galena, Kan., will soon begin the erection of a 150-ton mill.

A. W. Shulthis of Independence, Kan., has applied to the City Council of Cherryvale, Kan., for a gas franchise for that city to run 20 years.

The town of Chanute, Kan., has voted $75,000 bonds to improve its water supply by laying larger mains, extensions and aerating and filtering the water. It is possible also that a larger filtration system may be put in.

The Lyons Milling Company, Lyons, Kan., will erect a fireproof warehouse, 40 x 70 ft., of steel and reinforced concrete. The company will arrange for the installation of an oil burning equipment. The entire improvement will cost upward of $10,000.

M. Busch of Oklahoma City, Okla., has removed to Potean, Ark., where he will erect an ice plant.

The Jones-Everett Machine Company, Ardmore, Okla., will install a foundry in connection with its machine shop. The new concern will be known as the Ardmore Foundry Company, and will be composed of M. W. Jones, C. H. Everett and Harry B. Traw. A 36-in. cupola, capable of handling 3,500 pounds at one charge, has already been contracted for, and work on the building has been started.

The State Board of Agriculture is contemplating the installation of an oil-burning plant at Stillwater, Kan., and will use oil in place of coal in the State institutions.

Work has been started on the new freight depot of the Missouri, Kansas & Texas Railroad at Muskogee. The main building will be 80 x 338 ft. to be built of steel and reinforced concrete. There will be eleven tracks leading into the depot yards. The new depot will cost upward of $135,000. Seven fireproof automatic doors are to be used in its construction.

The Oklahoma Public Service & Interurban Company of Stillwater, Okla., has been incorporated, capital stock $100,000. The company will build four lines out of Stillwater. The directors are: Harry L. Drullard, Harry G. Lytle, A. G. Lampone, Geo. W. Tucmer, Jr., Claude Powell and R. A. Sturgeon.

The Pawhuska (Okla.) Chamber of Commerce, has succeeded in locating a large window glass factory in that city. It will be thirty blower plant and cost $65,000. Construction will begin at once.

The Pawhuska Gin Company of Pawhuska, Okla., is erecting a three-stand cotton gin in the eastern part of the city.

L. Y. McFarland of Bartlesville, Okla., has been awarded the contract for installing a water works system at Havener, Okla., to cost upward of $50,000. The Kansas City Southern Railway has lately removed its shops to Havener from Mena, Ark.

The Southern Hay Press Mfg. Company, Silver Creek, Lawrence County, La., has been incorporated; capital stock, $25,000. The incorporators are Thomas M. Freeman, F. W. Ehman and others.

The Home Light & Ice Company, Cleveland, Boliver County, La., has been incorporated; capital stock, $10,000. The incorporators are J. R. Collins, E. J. Knott and others.

The car factory of Brown & Herlihy, Denham Springs, La., was burned September 12, through an unknown cause. Loss, $50,000 to $75,000; no insurance.

The town of Shiner, Texas, has voted a bond issue of $8000 for the extension of the water works system.

The City Commission of Denison, Texas, has ordered a bond election to be held October 8 for the purpose of voting on an issue of $50,000 in bonds, the money to be used in putting in a pumping station at the new reservoir, together with a pipe line 3 miles in length to connect it with the present system.

The R. C. Lynn Machine & Foundry Company is building a new machine shop and foundry at Graham, Texas, and will remove to that city from Inooza City, Miss. The Commercial Club gives the site and pays all the expense of moving the plant. The foundry will be equipped for both cast iron and brass casting.

It is announced that T. P. Fay of the Jones Iron Company of St. Louis is contemplating establishing an iron foundry at Dallas, Texas.

The South

NASHVILLE, TENN., September 26, 1910.

While sales of machinery, material and supplies continue to fall somewhat below the expectations of dealers there is evidence that conditions have recently been shaping themselves for a very good trade later on. Inquiries are plentiful in most, though not all, of the principal centers of distribution, and the extent to which estimates are wanted shows that there are numerous projects, including shop and mill extensions or improvements, to be taken up and pushed to completion as soon as the situation warrants decisive action. Were it not for the general unrest of the country, resulting from political agitation, a strong buying movement would undoubtedly have set in by this time in all parts of the South, and shrewd observers believe that, being retarded, it is merely gathering head. Meanwhile manufacturers of some lines of equipment, such as boilers and power machinery, are already beginning to do a very satisfactory business.

The Wilson & Cochrane Company is putting into execution plans for a large manufacturing plant at Lottie, La., including sawmill, planing mill, shingle mill and lath factory.

The construction of a pumping plant for city service has been authorized at Rockmart, Ga.

The Broadway Mfg. Company, Knoxville, Tenn., is reported to be planning to build a large new factory, as the result of a consolidation with other interests which is to be effected.

The municipal power plant at Lakeland, Fla., which is now equipped with two alternating current generators of 120 kw., driven by Westinghouse vertical engines, is to be enlarged. The capacity of the city's pumping station may also be increased.

The municipal plant at Covington, Ga., which is equipped with a General Electric generator of 75 kw., driven by a Lane & Bodley engine, will be enlarged in capacity. The purchase of a new unit of 125 kw. is now under consideration.

It is reported from St. Augustine, Fla., that the plant of the St. Johns Light & Power Company, which is now equipped with three alternating current-generating units of 750 kw., built by the Allis-Chalmers Company, Milwaukee, will be acquired by new interests and considerably enlarged.

Structural material will be delivered shortly at Decatur, Ala., for the new shops of the Louisville & Nashville Railroad Company, which are to be pushed to completion this winter.

The North Alabama Rolling Mill Company, Sheffield, Ala., is strengthening its force and otherwise preparing for a busy season.

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Construction has been started at Melbourne, Ky., on a new machine shop for the Chesapeake & Ohio Railway Company, whose plant there has, for some time past, been crowded beyond its normal capacity.

From Birmingham, Ala., it is reported, although without direct confirmation, that the Howe Company, Louisville, Ky., will establish a plant there for the manufacture of brass goods.

Two boilers of 150 hp. have been ordered from the Henry Vogt Machine Company, Louisville, Ky., this season, by the North Vernon Lumber Company. One of these was installed in the company's plant at Louisville, and the other will be used for the new mill at Dyersburg, Tenn.

The Montgomery Light & Water Power Company, Montgomery, Ala., is arranging to furnish electric current for operating motors to be installed in a hardwood mill at that place, which has been purchased by the C. W. Cromwell Company, Jackson, Miss.

It is reported, from what appears to be a reliable source, that shops for the manufacture of steel gondola cars and steel underframes for freight cars will be erected in the vicinity of Louisville, Ky., by the Louisville & Nashville Railway Company.

The Chattanooga Plow Company, Chattanooga, Tenn., which has added largely this year to the capacity of its plant, is busy on orders from all parts of the South and West, and a good foreign trade has been developed.

The Birmingham Safety Cut-Off Lever Company, Roanoke, Va., has been incorporated, with $150,000 capital stock, to manufacture a railway couple cut-off. The company will erect a plant at a cost of $20,000. The officers of the company are R. H. Woodrun, Roanoke, Va., president; J. P. Birmingham, Lexington, Va., vice-president, and R. H. Willis, Roanoke, secretary-treasurer.

Hugger Bros., Montgomery, Ala., have been awarded the contract for the erection of the Catawba Fertilizer Company's plant at Lancaster, Ala. The main building will be 173 x 240 ft., with storage tanks 20 x 106 ft. The plans also call for an office building, pump house and oil house, all to be equipped with up-to-date fire apparatus. The plant will be electrically driven and the most modern machinery employed in fertilizer manufacture will be installed. The capacity of the plant will be 200,000 tons annually. John F. Stephens is president of the company.

The Lee Street Terminal Company, Montgomery, Ala., is to be organized with a capital stock of $80,000 fully paid in. The officers of the company will be prominent business men. The company will be organized among other reasons for the building of tracks from the tracks of the Mobile & Ohio Railroad to Montgomery street, in the business center of the city. The right of way has already been purchased. It is stated that passenger trains will be brought over these tracks and a terminal built at the corner of Lee and Montgomery streets which will be used by three railroad companies.

J. F. Walker and associates of Birmingham, Ala., plan to establish a plant at Tuscaloosa for the manufacture of columns of gum cypress and poplar. The plant will be equipped with modern woodworking machinery and have a capacity of about 350 columns per day, complete with bases and caps.

Southern Texas

AUSTIN, TEXAS, September 22, 1910.

The machinery trade in Texas, New Mexico, Arizona and Mexico kept up remarkably well all summer, and the prospects are encouraging for a substantial increase in the demand for various lines of machinery and tools during the fall and winter. This is particularly true of factory machinery. Many new manufacturing plants are being planned. Orders for the necessary machinery for some of them have already been placed. The season for general repairs and rehabilitation of shops and factories is now fairly open and good orders for machinery come from this source. Texas particularly seems to have entered upon an era of wonderful industrial development. More manufacturing plants are in contemplation and actually under way in the State than at any previous time in its history. The fact that in Mexico Americans are rapidly obtaining control of the various lines of manufacturing industry serves to broaden the market for American made machinery in that country.

The extensive shops which the Santa Fé Railroad is preparing to erect at Sweetwater, Texas, will call for the purchase and installation of a large amount of machinery and tools. Sweetwater is to be made the division point on the new 310-mile cut-off line which the Santa Fé is constructing between Texaco, on its transcontinental line, to Coleman, on its Gulf division. It is stated that the plans for shops, terminals and other improvements at Sweetwater call for the expenditure of more than $1,000,000 by the road in question.

The City Council of Georgetown, Texas, has issued an order for an election to be held October 17 to vote on the proposition of issuing $45,000 bonds, of which $32,000 is to be for water works and $13,000 for the electric light plant.

J. C. Houston, Floresville, Texas, is in the market for machinery for a 15-ton ice plant that he will erect at that place. He expects to have the plant ready for operation by next spring. Part of the output will go to ice vegetable shipments originating in that section of Texas.

P. A. Gorman, Street Commissioner of Waco, Texas, is conducting negotiations with a syndicate which proposes to install a new electric light and power plant and construct an electric street railway system in that city. Mr. Gorman has not yet divulged the names of the parties interested in the project.

N. J. Hitz, San Benito, Texas, is promoting the erection of a vegetable canning factory at that place. Associated with him in the project are Madison, Ind., men. The proposed plant will cost about $60,000.

An election will be held in Burnet County, Texas, October 22, to vote on the propostion of issuing $18,000 bonds for the purpose of erecting two bridges across the Colorado River. A like sum will be expended for the same purpose by Llano County, as the proposed bridges are to connect the two counties. The Board of County Commissioners of Burnet County, Burnet, has charge of the matter.

The city council of Rogers, Texas, has ordered an election to be held October 18, to vote on the proposition of issuing $14,000 bonds, the proceeds of which shall be used in constructing a water works system.

An issue of $11,000 bonds for improving the water works system of Belton, Texas, will be voted on by the people of that place on October 18.

James Harrington, Texarkana, Ark., who recently purchased 3,500 acres of coal land near Carbondale, Texas, including a fully equipped mining plant, will install additional machinery and also erect coke ovens and a brick manufacturing plant.

An election has been ordered by the city council of Ballinger, Texas, October 16, to vote on the proposition of issuing $20,000 of bonds for extending the mains and otherwise improving the water works system of that town.

The Border Gas Company, Laredo, Texas, has a large force of men at work laying the natural gas-pipe line that is to run from the gas field at Reiser to Laredo, a distance of 30 miles. Shipments of pipe for the proposed line are being received. The company also holds a franchise from the city of Laredo for laying a distributing system upon the principal streets. It has under consideration the construction of a gas-pipe line to San Antonio, 150 miles, and another one to Monterey, Mexico, about 160 miles. It owns a number of large gas wells in the Reiser field.

J. T. Cameron of El Paso has been granted a permit by the city council to erect a large meat-packing plant in that city.

W. F. Tappan of Worcester, Mass., has taken preliminary steps looking to the erection of a plant at Orange, Texas, for the manufacture of a breakfast food from rice.

According to an unconfirmed report The Texas Company, which has its headquarters at Houston, has in contemplation the laying of an oil pipe line from the new oil field at Toyah, Texas, to El Paso, about 200 miles.

The Holland-Texas Irrigation Company will install about $20,000 worth of machinery at its irrigation plant near Cotulla, Texas. T. N. Picnot of San Antonio is at the head of the company.

The Mexican Northern Power Company, a subsidiary concern of the Conchos River Agricultural & Electric Power Company, which has its principal office at Montreal, Canada, is making good progress in the construction of its great hydroelectric plant and irrigation system upon the Conchos River, 19 miles from Santa Rosalia, State of Chihuahua, Mexico. The English firm of S. Pearson & Son, which has offices in London and the City of Mexico, has the contract for the construction of the large dam across the Conchos River and for the installation of the hydroelectric plant for the company. The initial capacity of the hydroelectric plant will be 40,000 hp. It is planned to increase this later on to 90,000 hp. Power transmission lines will be built to the cities of Chihuahua, Parral, Santa Eulalie, Jiminez, Santa Barbara, Santa Rosalia and a number of other places within a radius of 150 miles. The irrigation system will furnish a water supply for the reclamation of 250,000 acres of land. The plans for this great enterprise call for the expenditure of about $20,000,000 gold. G. F. Greenwood, Montreal, Canada, is superintendent of the Mexican Northern Power Company.

The Compania Minera Agustias Dolores y Anexas of Pozos, State of Hidalgo, Mexico, has completed the installation of an electric power plant and other equipment.

Lon Hill, owner of the Harlingen Land & Water Com-

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pany and the townsite of Harlingen, Texas, has placed orders for machinery for a 400-ton sugar mill that he will erect at Harlingen. The mill will have a daily capacity of 400 tons of cane.

The large double pumps of the irrigation plant of the Mission Land & Improvement Company near Mission, Texas, which were recently installed, were given a test and found to work satisfactorily.

The Valley Reservoir & Canal Company, Chapin, Texas, which is constructing a large system of irrigation in the valley of the Rio Grande, will soon place an order for machinery for a large pumping plant. It will be located where the canal intersects with the reservoir.

John H. Davis and T. A. Austin, Laredo, Texas, have had plans and specifications prepared for an ice factory and cold storage plant that they will erect at that place. Bids will be asked on the machinery needed. The proposed plant will cost about $75,000.

The Tyler Commercial Club, Tyler, Texas, is in receipt of a proposition from the J. L. Wortham Construction Company of Beaumont, Texas, whereby it proposes to construct an electric railroad from Tyler to Paris, Tex., and to establish machine and repair shops at Tyler, in consideration of a bonus of $300,000 upon completion of the road. The proposition is now under consideration and it is believed that a favorable decision will be reached.

The Calvert Water, Ice & Electric Lighting Company, Calvert, Texas, is preparing to erect an addition to its plant.

It is reported that the water works of Shine, Texas, will be improved at a cost of $8000.

The City Council of Belton, Texas, has decided to enlarge and improve the water works system and has ordered an election to be held October 18 for the purpose of voting on an issue of $11,000 in bonds, the proceeds to be used in drilling a new artesian well and enlarging the capacity of the standpipe.

Toronto

TORONTO, September 25, 1910.

The demand for factory equipment and other productive plants continues to reflect the growth of the country, though in a way to indicate that the growth has been more nearly caught up to than it evidently was at the same time last year. Canadian towns are still springing into existence on what were previously blank townsites, and the new towns call for works of various kinds, such as brick making industries, lumber dressing factories and other industries contributing to town building. Town expansion goes on, too, and calls for new industrial developments, but the pace is soberer. Municipalities' credit is still good and the issue of debentures continues to be rather copious, more or less of the money being expended on such outfits as fire fighting appliances, pumping works, public lighting plants, &c. Private enterprise is also healthy and money seems not to be lacking to carry out changes on large or small scale. It is always to be kept in mind, however, that Canada has done a tremendous amount of fitting up in the last year or two.

The ratepawers of Merritton, Ont., are to vote September 30 on a by-law providing for the fixing at $100,000 of the assessment of the Independent Rubber Company, which has been formed to manufacture rubber boots and shoes. The company undertakes to employ 300 hands and to pay out not less than $100,000 in wages every year after the first. Mr. Robinson, the president, stated at a public meeting of the ratepayers this week that the machinery for the plant will be obtained at once.

The machinery for the power distribution plant the municipality of London, Ont., is installing is not coming forward as fast as it was expected, and there is some doubt that the power station will be completed by December 1, as was planned. It is expected that the pumping machinery will be in place in a very short time. The motors have not yet arrived, but they will be ready for service by November 1. Nearly the whole of the construction work is now finished, and with the setting up of the machinery the plant will be finished.

The great grain elevator plant the Canadian Pacific Railway Company has been at work upon for many months at Victoria Harbor, the Georgian Bay terminal point of its new trans-Ontario link in its through route for Western grain, is expected to be ready to receive the first lake shipments early in October. The Canadian Bridge Company of Walkerville had the contract for the steel work, which is just completed. The motive power instalment is also practically finished. Officials of the Canadian Pacific Railway Company tested the work a few days ago, Mr. Christie of the Westinghouse Company starting the turbines.

The Canada Steel Company, which was incorporated last spring, to do business in Ontario, has decided to establish its works in Hamilton. For a time it seemed probable that Welland would get the industry, a free site having been offered by that town. The company proposes to put up and equip works to cost $400,000 and to employ 300 men. The men who are at the back of the undertaking are for the most part of Montreal and Toronto. They are not of the group who are uppermost in Hamilton's steel, power and traction interests. F. W. Baillie, of the Toronto financial firm, Baillie, Wood & Croft, is president. R. M. Bertram, formerly president of the Bertram Shipbuilding Company, Toronto, is vice-president. W. M. Currie, formerly chief inspecting engineer of the Hamilton Steel & Iron Company, is to be manager. Bedstead angles, light structural angles, agricultural shapes of all kinds, concrete bars, light plowbeams, sleigh shoes, &c., will be rolled from rail scrap. The rails will be broken up, heated and passed through rolls, which will split them into three pieces—the head, webb and flange. Electrical power will be used for the operotion of the plant, and for that purpose special machinery will be designed. Hamilton being an important industrial center, favored by cheap hydroelectric power, and being an important railroad point toward which worn out rails drift, is deemed a very suitable spot for the industry. The plant is being designed by one of the leading engineering firms in Pittsburgh. The mill will be in a structure of steel concrete and currugated iron 70 x 250 ft. There will be a number of other buildings. It is stated that later the company will add a tube mill.

The Water Commissioners of Welland, Ont., are calling for tenders for the supply of 2000 ft. of 6-in. and 2000 ft. of 14-in. cast iron water pipe, and specials therefor; also 300 ft. of 14-in. flexible pipe for crossing the canal.

In Montreal the Canadian Pacific Railway Company is enlarging its Windsor station at a cost of between $2,500,000 and $3,000,000, and is enlarging and improving its terminal at the Place Viger station at a cost exceeding $1,000,000. The Grand Trunk Railway Company is arranging for the elevation of its tracks from St. Henri to Bonaventure station at a cost that may run to $6,000,000. The Canadian Northern Railway Company is negotiating for the purpose of clearing the way for an up to date station and freight sheds in the heart of the city and will probably spend thereon as much as $5,000,000. The Grand Trunk Pacific Railway Company's terminal projects in Montreal are rather farther in the future, but they will be very large. On the water front the Harbor Commissioners are planning an expenditure of $6,000,000 to spread over the next three years.

The Cleveland Bridge & Engineering Company of Darlington, England, and the Metropolitan Amalgamated Railway Carriage & Wagon Company of Birmingham, England, have obtained incorporations in Canada as the British Empire Bridge Company, the capital stock being $5,000,000. The new company is understood to be one of the tenderers for the construction of the Quebec bridge.

The Canadian Tube & Iron Company of Montreal has been incorporated with a capital stock of $1,000,000.

The Niagara, Welland & Lake Erie Railway Company is applying to the Dominion Parliament for power to construct an electric railway line from Niagara Falls, N. Y., to points on Lake Erie between Fort Erie and Port Dover, via Welland and Port Colburne.

The Bullen Company, ship repairer, Vancouver, B. C., has applied to the Canadian Minister of Public Works for a subsidy for a drydock of the first class. It is to be located at Esquimault. It is believed that the company has associated itself in the enterprise with a large British shipbuilding firm. An expenditure of $3,000,000 is to be involved.

The prospectus of the Port Arthur Wagon Company has been published. In this it is shown that the company has in hand large contracts with several imoprtant concerns, such as the John Dure Plow Company and the Tudhope-Anderson Company.

The construction at Belleville of what is said to be the second largest roundhouse in Ontario is expected to be completed for the Grand Trunk Railway Company within the present year. The work, which was begun in August, is in a forward state. It is to contain 42 engine stalls. There is to be an 80-ft. turntable. There are 350 men at work on the structure. The company's old machine shop is to be demolished and a new one, 50 x 200 ft., is to be put up near the roundhouse entrance. A thousand carloads of material have already been used in the construction.

The Canadian Board of Railway Commissioners has ordered the Canadian Pacific Railway Company to build a subway at Broad street in Regina that will be the largest work of the kind in the West, if not in all Canada. It is to provide for the carrying of 19 tracks.

The Industrial Commissioner at Port Arthur, Ont., has received a telegram from Robert Greig of the Port Arthur Enamel Works, dated at New York, to the effect that Mr.

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Greig had been busy in the latter city for a whole week in regard to machinery and buildings for the plant, and that much larger works were being planned than those contemplated at the outset.

Several of the manufacturers in Gananoque, Ont., have improved their works in the past summer, auxiliary steam plants being installed in some instances in order to be forearmed against a momentary failure of water power in time of low water. The Jones Mfg. Company, Skinner & Co., Cowan & Britton and the Spring & Axle Company have more than doubled their power resources.

The Collingwood (Ont.) Shipbuilding Company has a prospect of a busy winter. A new freighter now on the stocks is to be launched late in October or early in November. Some of the large freighters will be sent to the company's yards for repairs. The company has just closed a contract for the lengthening of the Canadian Pacific Railway steamer, the Alberta. The rebuilding of the whaleback Trevor is also to be done at the company's works.

The shops the Grand Trunk Pacific Railway Company is building at Winnipeg are to be on a very large scale. Several huge structures have been erected in the 14 months since the work of construction began; 42,000 tons of concrete have been built in, 4,200,000 bricks, 250 carloads of steel, $35,000 worth of copper, and 256 carloads of such articles as piping, radiators, tanks, contractors' plant, tarpitch lumber, &c. The locomotive shops are 184 x 823 ft. and 75 ft. high. The frog and track shop, near completion, is 60 x 100 ft. The frog shop is 100 x 250 ft. The power house is 110 x 150 ft. The chimney, which is of reinforced concrete, and has an inside diameter of 11 ft., is 211 ft. high. The gray iron foundry, a building 200 x 250 ft., is a structural steel frame. There are 13 buildings for which the contracts have not yet been let.

The Tobin Arms Mfg. Company of Woodstock, Ont., has completed arrangements for the purchase of the plant, patents, tools, materials, manufactured product and other assets of the Caldwell Bit & Tool Company of Port Rowan, Ont. The Tobin Company is arranging to extend its works.

The by-laws submitted to the ratepayers of Woodstock, Ont., to authorize the bonusing of the Canadian Linderman Machine Company and the Fibre Board Folding Package Company received almost unanimous support, and the industries will accordingly be established. The product of the Linderman Machine Company is a dovetail glue joining machine, to sell at prices ranging from $3000 to $5000. The company is made up of parties from Muskegon, Mich. Machinery to the value of $30,000 is to be put in the Woodstock factory.

The ratepayers of Welland approved a by-law authorizing the raising and expending of $52,000 for the improvement of the town's water works.

Negotiations are still on foot between the Industrial Commissioner of Brantford, Ont., and parties in Detroit for the establishment of an automobile factory in the former city.

According to figures given out by the Industrial Bureau of Winnipeg, Man., the annual manufacturing output of that city has doubled in the last five years. The value of the output in the last year is given as $40,000,000, as compared with $18,875,000 in 1905. J. P. Given of Chicago has informed the bureau that he hopes very soon to have a plant in Winnipeg for the utilization of flax straw.

T. McAvity & Sons of St. John, N. B., are considering plans to establish brass works at Port Arthur, Ont., and Montreal. A site was secured some time ago in Port Arthur, but the land is needed by the G. T. P. Railway Company, and another lot twice as large has been offered the company. A long term option has been secured by the company on a site in Montreal. Whether this will be taken up and a factory established there by the company is said to be dependent on the success of the company in securing certain large contracts figured on. If the company builds in Montreal the works will be large enough to employ 500 men. Also a site for large works in St. John is being sought by the company.

A new machine shop is in process of construction for the Canadian Pacific Railway Company at Medicine Hat, Alberta. It is to be equipped with the most up to date machinery, adequate for handling the largest repair work. Heavy repair work for railway equipment on the part of the line between Calgary and Moose Jaw will no longer have to be sent to the Winnipeg shop after this Medicine Hat plant is ready for operation.

Engineers are at work making surveys in connection with the Canadian Collieries (Dunsmuir) project for the development of 50,000 hp. of hydroelectrical energy on the Puntledge River in the center of the Comox coal field, Vancouver Island. About a year will be spent and about $1,000,000 will be laid out on this work. The power will be used to operate a system of compressed air haulage in the mines and in running the various plants connected therewith, as well as for traction purposes on the 14-mile railway connecting the various collieries with the ore bunkers at Union Bay.

Speaking of the economic effect the Hudson Bay project the Canadian Government has in hand, Mr. Butler, general manager of the Dominion Steel Corporation, who was formerly Deputy Minister of Railways, said that there is room in the West for 30,000 or 40,000 miles more of railroad than that part of the country now has, and that this additional mileage will be built within a reasonable time. The Hudson Bay Railway will, he considers, give the rails and other products of the Dominion Steel Corporation a cheap and short way into that railroad building region.

The contract for constructing the new aqueduct intake at Point St. Charles has been awarded by the Montreal Board of Control to Lemoine & Son and L. A. Desy, their tender being for $155,000.

The Hamilton-Lewitt Company, which is establishing itself in Amprior, Ont., is to employ 50 hands.

The Hawthorne Silver & Iron Mines Company has been organized to develop iron ore deposits tributary to the Kingston & Pembroke Railway line. The company owns 70,000 acres of land. It will ship ore for a time and proposes to manufacture pig iron in Kingston in the not distant future.

The Ontario Iron & Steel Company of Welland last week turned out a wheel of 12 tons weight. This is said to be the largest casting of the kind ever produced in Canada. It was made for the Allis-Chalmers Bullock Company of Montreal.

The Board of Governors of the Kingston School of Mining finds it impossible to award contracts for the erection of the Nichol Building for mining and metallurgy, owing to the high level of the tenders.

Mr. Plummer, president of the Dominion Steel Corporation, says that the company never went into a winter with better prospects in the way of orders for business.

The Dome Mining Company will install 40 heavy stamps, crushers and a cyanide plant as soon as the roads into the Porcupine country will permit of winter travel. The Porcupine gold region of northern Ontario promises to be a field in which a large amount of plant will be necessary for the operation of the mines. It is not a poor man's country, as the surface deposits led people to name the Cobalt district. There seems to be a widespread gold area in the Porcupine, but it will have to be worked by capital freely invested in plant.

Representatives of the 34 Ontario municipalities committed to undertakings to bring electrical energy from the Hydro-Electric Power Commission of the Province met the chairman of the commission at London, Ont., and ready to consider the application of Windsor for 15,000 hp., 12,000 or 13,000 of which the town would dispose of to Detroit. The convention decided in favor of granting Windsor's request, upon the conditions that the export service should be terminated on reasonable notice, and that the profits made on the electricity furnished to Detroit be divided among all the municipalities in the power league.

The Dominion Stove & Foundry Company, Ltd., Penetanguishene, Ont., has been incorporated with $250,000 capital stock, by Charles Beck, Dennis A. Lahey, Charles E. Wright and others.

Interior Canada

WINNIPEG, September 22, 1910.

There never was so heavy a demand for structural steel in this part of Canada as this season. Building operations have made new records, and an unusually large number of warehouses is being erected. The advent of the Grand Trunk Pacific Railway to western Canada has necessitated the construction of quite a few bridges, and several more have to be put up. Practically all the work so far has been on the main line, but in the future, like other roads, many branches will be built and here and there bridges of big dimensions will be required. Manufacturers of structural steel are looking forward to increasing business in western Canada, as the country is still young and is bound to be developed.

The iron and steel works here, although still in their infancy, are growing rapidly and some surprisingly large contracts have been undertaken by them this year. They are adding new equipment all the time, but of course are not able to handle the volume of trade in their line in the west. Train load after train load of material comes from the east and south, and several millions worth of machinery and frame work of all descriptions comes in from the United States every year, and this has been a specially brisk year in that connection.

The crops have turned out better than was expected a couple of months ago, and that, together with the enormous

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amount of money being brought in by capitalists and settlers, makes money plentiful, and business men report the financial situation very satisfactory. In some parts where the crops were damaged by drouth in the month of June the season's work on the farm has been somewhat discouraging, but it so happens that it was the older districts that suffered most, and as the farmers there have been accumulating for years they do not suffer as much from a bad crop as the new settlers do. Manufacturers and wholesalers are quite satisfied with the situation, and it is anticipated that industrial development will be greater next year than in any former season. This is particularly a big field for farm machinery, and it is stated that manufacturers are working overtime to supply the demand from all parts of the country. This is likely to be the case for many years, as the country west of the Great Lakes is being settled rapidly.

A company composed of leading business men has been formed in Winnipeg, to be known as the Western Steel & Iron Company, Ltd., with a capital of $300,000. The company's special line of work has not yet been announced.

A party of English capitalists is preparing to erect a large hotel in Saskatoon, Sask. A site has been purchased for $60,000, and it is said that the building will cost about $250,000.

The Winnipeg Steel Culvert Company, Ltd., with a capital stock of $60,000, and headquarters in Winnipeg, has been incorporated.

The roof, most of the machinery and a considerable part of the building of the Western Iron Works, Elmwood, Winnipeg, was damaged by fire recently.

The Port Arthur authorities are trying to induce William McKenzie, president of the Canadian Northern Railway, to establish a foundry there, to use the pig iron manufactured at the plant of the Atikokan Iron Works.

The Shell River Lumber Company is building a mill at the west end of Prince Albert, Sask. It will have a capacity of between 30,000 and 40,000 ft. per day.

McLaren Bros., proprietors of the Strathcona Hotel, Winnipeg, are erecting a seven-story hotel on Main street.

McKinnon & Clarke, proprietors of the foundry at Cranbrook, B. C., report a busy season, the saw mills in the Crow's Nest Country having operated steadily since early spring. The company makes a feature of manufacturing a saw guide that has established a good reputation.

The authorities of Medicine Hat, Alberta, are talking of replacing all wood pipes with iron pipes. A by-law to that effect has been carried there.

A Winnipeg firm has secured the contract for the Canadian Northern Railway roundhouse at Port Arthur.

The J. McDermid Company, Winnipeg, is working on the contract for the Canadian Pacific Railway machine shops at Kamloops.

The Southwest

KANSAS CITY, MO., September 26, 1910.

The machinery trade of the Southwest, although improving, is still very irregular. Many of the orders recently entered have developed from inquiries made some time ago, and they originate largely at points distant from the centers of population where new industries are being opened up or other development work is in progress. Steam, gas and gasoline or oil engines, electric generators, motors, transformers, pumping outfits, hoists, air compressors, drilling rigs, crushing, mining and ore treating machinery constitute the lines most in demand. For sawmills and plants manufacturing or utilizing various wood products some equipment is being purchased, and from the general industrial field, including factories and machine, boiler, tank or fabricating shops, there are scattering orders for standard apparatus.

Local representatives of Eastern machinery houses have been figuring on the equipment of a large new factory and power plant to be erected in Kansas City by the National Biscuit Company.

An elevated steel reservoir to hold 333,000 gal. will be erected before long in connection with the city water system at Ft. Worth, Texas.

Work has been commenced on an addition 25 x 150 ft. to be made to the power plant of the Metropolitan Street Railway Company, Kansas City, in order to provide room for the installation of additional boilers and other equipment.

The Bisbee Improvement Company, Bisbee, Ariz., which is now operating an electric generating plant equipped with steam turbines, 800 kw. capacity, has had plans drawn for an enlargement of its facilities, with a view to supplying mines and other communities in the vicinity.

The Chicago, Rock Island & Pacific Railway will build a new roundhouse and install some repair equipment at Hot Springs Junction, Ark.

W. J. Benjamin, J. J. Laubach and others of Las Vegas, N. M., are organizing a company to erect a large hydroelectric power plant on the Rio de La Casa, the franchise for which has already been granted by the local authorities.

One of the Gates gyratory crushers ordered for its new plant is now being installed by the Ray Consolidated Mining Company at Ray, Ariz., and additional machinery will follow as soon as the facilities can be provided.

A combined electric power and refrigerating plant is to be built for the municipality at Pryor Creek, Okla.

Machinery for a municipal pumping station is to be purchased in about a month at Paris, Ark.

James T. Gates, Wagoner, Okla., has drawn plans for a pumping plant and system of water works at Haskell, Okla., the equipment of which includes an elevated steel tank, boiler and two steam pumps of moderate capacity.

J. A. Ritzler, Kansas City, has begun the erection of a new two-story tin shop, 30 x 115 ft.

An electric power plant is to be built by the Greenville Railway Company, Greenville, Texas.

A new hoisting unit of large capacity is to be installed by the Mildred Mining Company, Stanton, Ariz. An ore crushing plant equipped with 10 stamps is now being erected and other improvements are to follow.

It is reported from Phoenix, Ariz., that the Phoenix Street Railway Company, as a result of the success which it has had in building cars in its own shops, may enlarge the latter and install additional machinery.

A 250-ton ore reduction plant is to be erected by the Cinco Mines Company, Hostotipaquillo, Jalisco, Mexico.

Machinery for a new pumping plant is being installed by the Arkansas & Arizona Mining Company, Jerome, Ariz., and other improvements are to follow.

E. R. Smith, Stephens, Ark., will install an electric light plant to be operated in connection with the Stephens Canning & Mfg. Company, of which he is the owner.

The City Council of Exeter, Mo., is considering the installation of a water works system.

The Tulsa Corporation, Tulsa, Okla., will install a 500-kw. alternating current generator, to be driven by a turbine engine, two boilers of 500 hp. each and condensers.

The Arkansas Heating Company, Little Rock, Ark., has been incorporated, with $25,000 capital stock, for the purpose of manufacturing an oil gas burner invented by W. L. Slater and to do a general plumbing business, as well as carrying a full line of plumbing, heating and gas supplies. The company is now in the market for some 300-gal. closed steel tanks, with working pressure of 120 lb.; 10,000-gal. open tanks for supply purposes, hot water systems, hot air systems, bathroom and toilet fixtures, and a full line of plumbers' supplies, air compressors, single phase 1 and 2 hp. motors and three-phase 2-hp. motors. The officers of the company are Charles E. Adams, president; E. J. Slater, secretary; W. A. Slater, manager.

The Imperial Heater Company, Kansas City, Mo., has been incorporated, with $100,000 capital stock, by W. Z. Flannery, R. L. Wilder, George B. Cushman and others.

The municipality of Hamburg, Ark., has awarded to W. J. Kennedy, St. Louis, Mo., a general contract for installing a water works and electric light plant. The equipment will include a 50,000-gal. tank, which is to be 125 ft. high.

The Northwest

MINNEAPOLIS, MINN., September 26, 1910.

Increased buying of equipment on the part of Northwestern railroads, even though mainly in small lots at a time, and a better volume of inquiries from industrial concerns generally are features of the present trade situation that bring encouragement to manufacturers and dealers. Information as to new enterprises or development comes principally, however, from the more remote districts, notably in the West, and the largest orders for machinery still originate there, whether for the account of the mining, ore reduction, power, irrigation and lumber companies, or of the communities that have grown up around these several operations.

The Otter Tail Power Company, Fergus Falls, Minn., which operates a hydroelectric plant of 600 kw. equipped with General Electric generators and the S. Morgan Smith Company's turbines, will establish an auxiliary steam power plant at Wahpeton, Minn. Further particulars have not been made public.

A steam heating and electric power plant is included in plans for a new institutional building at Redfield, S. D., bids upon which will be taken by the architect, August Schwenn, Madison, Wis.

A steel tank of 50,000-gal. capacity, carried on a 100-ft. steel tower, together with a deep well pump of moderate capacity and other equipment will be purchased by the city

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of Bradley, S. D. Bids are to be taken until October 5 and construction work pushed to completion this fall.

A steam turbine power plant will be installed in the new timber cutting mill at Elk River, Idaho, that is under construction by the Potlatch Lumber Company, Potlatch, Iowa, and all of the machinery operated by means of electric motors. The entire mill was designed by W. A. Wilkinson of Minneapolis, Minn.

The contract for the engine to be installed in the new municipal power plant at Miles City, Mont., has been awarded to Whiteacre & Co., St. Paul, Minn. The electrical machinery will be furnished by the General Electric Company, Schenectady, N. Y.

L. U. Loomis, Philipsburg, Mont., who has control of two of the mines in that vicinity, is installing a new hoist and air compressor.

Plans are in course of preparation for a new factory to be built by the Oxford Linen Mattress Mfg. Company, at Winona, Minn.

Gerrard & Co., Sheridan, Wyo., have the contract for furnishing a steel tower and tank of 75,000 gal. capacity, motor-driven pump &c., for the water system at Laurel, Mont.

A powerful pneumatic hoist and an air compressor built by the Nordberg Mfg. Company, Milwaukee, are in operation at the mine of the Boston & Alta Copper Company, Corbin, Mont., power being supplied from a hydro-electric plant in the vicinity.

The box manufacturing plant of the H. H. Rieckoff Company, New Duluth, Minn., which recently burned, will be rebuilt, temporary arrangements being made meanwhile to take care of the company's business. There are at present a large number of orders on the books.

The authorities at Miles City, Mont., have awarded the contract for an elevated steel tank to the Chicago Bridge & Iron Company, Chicago, Ill.

In consequence of losses from the recent conflagration considerable machinery will be needed by the Lincoln Mining Company, Wallace, Idaho, including a new compressor plant.

From Missoula, Mont., it is reported that a plant will be built there this fall by the Standard Lime & Brick Company.

The Construction of a municipal pumping station, water and sewage system is under consideration at Red Lake Falls, Minn.

The Blue Bell Mining Company, Wallace, Idaho, will install an air compressor and drilling machinery. Other equipment is to be purchased later on.

The Idaho National Harvester Company, Ltd., Moscow, Idaho, is enlarging its plant by the erection of a reinforced concrete building 50 x 100 ft., one story, which will be equipped with modern machinery and used for assembling purposes. The plant is located on a tract of 7 acres and contains about 13,000 sq. ft. of floor space, including the new addition now being erected, and additional buildings will probably be erected during the summer of 1911. Orders have been placed for new equipment to be installed in the new addition when completed.

The light and water works plant of the city of Fairmont, Minn., will be improved at a cost of $3000.

The Coeur d'Alene Ironworks, Ltd., Wallace, Idaho, is erecting new shops in which are to be installed the following equipment: One 10-hp. motor, one 20-hp. motor, one 25-hp. motor, one patternmakers' lathe, one band saw, one rip saw, one jointer, one surfacer, three trimmers, power punch, power hammer, 24-in. Cincinnati drill press, four Lodge & Shipley lathes, one 24 in. by 30 ft., one 36 in. by 16 ft., one 27 in. by 14 ft. and one 16 in. by 10 ft.; one 24 in. by 6 ft. Rahn & Carpenter lathe, one 36-in. Cincinnati planer, one 32-in. drill press, electric drill, one No. 2 keyseater, one 7 x 10 ft. Betts boring mill, one 2-in. bolt cutter, one cupola, one steel gib crane. Compressed air will be used for riveting and chipping in the shops.

The Farther Central West

OMAHA, NEB., September 26, 1910.

Orders for machinery and other mechanical equipment, as well as material and supplies, continue irregular and scattering. Jobbers and dealers are now profiting more by the present situation than manufacturers or their direct representatives, and this condition is one likely to last until at least late in the fall. At the same time, salesmen for the large machinery builders have recently been very active, and they are drumming up considerable trade in unexpected quarters. One of the surprises of the season is the amount of business coming from the Black Hills country, where there has been a decided renewal of activity in mining operations. This trade has not, as yet, run into very large figures, but it is relatively an important item, and the prospects are that it will play quite a part in the year's business.

Improvements to be made in the plant of the Waterloo Drop Forge Company, Waterloo, Iowa, will include a new building, 120 x 120 ft. The general plans, however, have not yet been fully decided upon.

Arrangements have been made by the authorities for the installation of a new pumping unit at Ida Grove, Iowa.

Contracts recently taken by the Des Moines Bridge & Iron Company, Des Moines, Iowa, include an elevated steel tank of 75,000 gal. capacity for Hampton, Iowa, and complete water works for Cheyenne Wells, Colo.

Extensive improvements are to be made in the city pumping plant at Fairfield, Iowa.

The Gus Pech Foundry & Mfg. Company, Le Mars, Iowa, which makes a specialty of well drilling machinery, is planning to erect a large foundry building in the spring. The addition recently completed gives it increased facilities, but a considerably heavier output is needed in order to meet the requirements of the business.

An improved water works system, involving the purchase of new pumping machinery, is being planned by the authorities at Council Bluffs, Iowa.

The installation of machinery for municipal power and lighting is proposed at Akron, Iowa.

Plans and specifications for general water works improvement have been prepared at Grand Island, Neb., and a bond issue of $90,000 for the purpose will be submitted to the voters shortly.

Joseph E. Bortenlanger, Omaha, was awarded the contract for boilers, engines, dynamos, motors and pumping machinery to be installed in the new municipal power and water works plant at Pella, Iowa.

It is reported that W. D. Bowen, Charles City, Iowa, has been granted the franchise to install an electric power and lighting plant at Sanborn, Iowa.

A new pumping station is to be built at Guthrie Center, Iowa, and the water system modernized.

A bond issue of $5000 has been voted at Underwood, Iowa, for the installation of pumping machinery and a water distribution system.

A repair shop with machine tools, forge, &c., is to be built this fall at Falls City, Neb., by the Missouri Pacific Railway. The necessary equipment has been ordered.

The construction of an electric power and pumping plant for municipal service is now under consideration at Milford, Neb.

In addition to the engine driven generators now operated, which were supplied by the Ft. Wayne Electric Company, Ft. Wayne, Ind., the authorities at Fremont, Neb., will purchase a steam turbine unit of 500 kw. for the municipal lighting station.

The Omaha Structural Steel Works, Omaha, is reported to have under consideration a material extension of its present shop facilities, including new buildings and machinery.

The Topeka Foundry & Machine Shop, Topeka, Kans., formerly owned by Roy Bone of that city, has been sold to M. Masching, St. Joseph, Mo., who will hereafter conduct the business under the name of the Topeka Foundry & Mfg. Company.

The Tri-City Railway & Light Company, Davenport, Iowa, through its directors, has authorized an issue of $20,000,000 in bonds. Of this amount the sum of $10,000,000 will be used to refund present debts, while $2,000,000 will be used in improvements and extension work during the next two years, and the remaining $8,000,000 will be issued from time to time as occasion requires to maintain the properties of the company. The construction of the Muscatine Interurban line will be included in the expenditures during two years.

Grand Island, Neb., has plans prepared for a water works system to be constructed at an estimated cost of $100,000.

The Des Moines Sheet Metal Company, Des Moines, Iowa, has been incorporated with $15,000 capital stock by L. C. Krutz, president; E. M. Sheridan, J. R. Shuster, Frank Fisher and J. C. O'Donnell.

Manufacturers of this section who use gray iron castings in large quantities for machinery parts in their respective lines of production are placing season contracts with the Ottumwa Iron Works, Ottumwa, Iowa, which has excellent facilities for that class of work.

Pacific Coast

PORTLAND, ORE., September 23, 1910.

Those who are engaged in selling and installing machinery on the North Pacific Coast have found increasing evidence this fall of the expansion which is taking place all through the more populous sections of Oregon, Washington and northern Idaho, as well as across the Canadian border,

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in all lines of general manufacturing. It is this that has recently constituted the principal support of the market. In addition, however, there are rapidly growing requirements on the part of the various timber and woodworking mills, quarries, crushing plants, logging and mining companies, traction lines, central power stations and the like, from all of which there promises to be more business during the coming winter season than at any previous period in the history of this territory. Even repair work, which has long been the mainstay of many shops and foundries, is becoming a more important factor in the situation, due to the renewals of parts made necessary by the severe service to which operating machinery of every description has been subjected ever since last fall.

From the foregoing it should not be assumed that there is room on the coast at this time for an unlimited number of machinery plants or agencies competing for the business. The ones already established are in good shape to take care of the season's bookings and any new concern entering the field, that does not supply some special or local need, will have the same struggle for a foothold as in any other section. Any one contemplating such a move would do well to make a thorough study of conditions before entering upon the initial investment.

The Pacific Coast Power Company, Seattle, Wash., is constructing on the White River a power plant capable of developing 100,000 hp. Water will be diverted from the White River at a point over one-half mile above Buckley, Wash., and will be conveyed through a canal a distance of eight miles through a natural basin, in which is located Lake Tapps. The flood waters of the stream will be impounded in this basin and will be conveyed by a tunnel through the mountain between the lake and Derringer, a station on the Northern Pacific Railroad, within 1000 feet of which will be located the power house. From this point the water will be returned to White River. Water will be delivered to the machinery in the power house under an effective head of 450 ft. The first installation of machinery will be for 36,000 hp., but the ultimate installation will be for an output of 100,000 hp. and will be added as the market demands.

The Pacific Power & Light Company, 1211 Spalding Building, Portland, Ore., has been bonded for the sum of $30,000,000 to be expended for improvements during the term of life of the bond issue. The company owns and controls gas and electric plant at Astoria, The Dalles, and Pendleton, Oregon; Lewiston, Idaho; Walla Walla, Pasco, Kennewick, North Yakima, and Sunnyside, Washington, and is affiliated with the Electric Bond & Share Company, 71 Broadway, New York City. The company expects to rebuild the gas plant at North Yakima, erect substations at Walla Walla and North Yakima and construct about 100 miles of 66,000 volts of transmission line in the Columbia River valley. These improvements will be in addition to the ordinary maintenance and requirements and will probably cost about $400,000.

The Sumner Iron Works, Everett, Wash., is about to begin the construction of its new Canadian plant, for which a site of 30 acres has been secured at Burnaby, between Vancouver and New Westminster, B. C.

Commercial interests of Kenton, Ore., are reported to be back of the construction there of a new factory to be owned and operated by the Ajax Auto Traction Company.

By the time fall trade in this section has become really brisk, the new foundry and shops of the Vulcan Iron Works, Seattle, will be in full operation, ready to take care of the large business which this company has developed, particularly in the line of mining machinery.

As soon as the plant of the Salem Water Company, Salem, Ore., is secured by the city, as at present proposed, a large expenditure for new equipment and other improvements will be authorized.

If the present plans of the authorities are carried out, the municipal plant of Seattle, which now has a capacity of 15,000 k.w., will be considerably enlarged and improved. Action in the matter will be taken at the November election.

Plans are now being made for the construction of a system of municipal water works at Waterville, Wash.

The city of Tacoma will authorize the construction shortly of two new bascule bridges at an estimated cost of $621,000.

The Golden Gate Mining Company, Sitka, Alaska, has ordered five additional stamps for its ore crushing plant on Chicagoff Is., doubling the capacity of the latter.

Work is now well under way on the new auxiliary steam power plant of the Portland Railway, Light & Power Company in Portland, Ore., which will be 100 x 100 ft. and have an initial capacity of 7500 kw. Other equipment will be installed later, as the growing needs of the system require it.

The San Diego Shoe Mfg. Company, San Diego, Cal., has broken ground for the erection of a factory building 50 x 140 ft., to be completed and ready for occupancy within seventy-five days.

The City Council of Oceanside, Cal., will expend $20,000 for the construction of a new water works system.

The Standard Railway Supply Mfg. Company, Tacoma, Wash., has been incorporated with $1,000,000 capital stock by O. L. Lance, F. F. Foster and L. F. Crumley.

The Seattle Car Mfg. Company, Seattle, Wash., whose forge and machine shop were recently destroyed by fire, is erecting a new fireproof building 75 x 100 ft., which will be equipped to handle all kinds of car and bridge construction.

J. G. White & Co., Inc., engineers and contractors, 43 Exchange place, New York, have been awarded a contract for the engineering and construction of a steam and electric power plant to be built for the Power Transit & Light Company at Bakersfield, Kern County, Cal. The building will be 82 x 140 ft., with substructure of concrete, self-supporting steel frame and walls of metal lath and plaster, which is the usual form of construction throughout lower California, and will be designed to accommodate two 2000-kw. horizontal turbines, with boilers, condensers and necessary auxiliaries. A 750-kw. turbine will be temporarily installed at the earliest possible date. As the boilers will be installed with oil burners, there will be no basement under the boiler room.

Government Purchases

WASHINGTON, D. C., September 27, 1910.

The Bureau of Yards and Docks, Navy Department, Washington, will open bids October 8 for pumps, piping and appurtenances for fuel oil and gasoline storage tanks at Bradford, R. I.

The Paymaster-General, Navy Department, Washington, will open bids October 11, under schedule 2886, class 1, for one motor-driven blower, and under schedule 2909, for two flat turret lathes, three geared-head lathes, one No. 2 wire feed screw machine, one combination turret lathe and one motor-driven engine lathe.

The Bureau of Yards & Docks, Navy Department, Washington, will open bids October 22, for a dry dock pumping equipment at Navy Yards New York and Puget Sound.

The commanding officer, Frankford Arsenal, Philadelphia, Pa., will open bids October 10, for the alteration and extension of the boiler plant.

The Isthmian Canal Commission, Washington, circular No. 605, calls for bids to be opened October 3 for two manual operated double twin drills, two motor-driven double twin drills and two hydraulic compasses.

The Isthmian Canal Commission, Washington, will open bids October 14, under circular 606, for condenser, motor driven engine lathe and valve reseating machine.

The Bureau of Yards and Docks, Navy Department, Washington, opened bids September 10 for additions to the power plant and distributing system at the Naval Hospital, Annapolis, as follows: Evans, Admiral & Co., New York, $23,242; the John W. Danforth Company, Washington, D. C., $19,787; the Noel Construction Company, Baltimore, Md., $19,200.

The Isthmian Canal Commission, Washington, opened bids September 9, under circular 601, class 1, for oxyacetylene welding and cutting plant as follows: Bidder 39, the Linde Air Products Company, Buffalo, N. Y., $7255; 90, the Davis-Bournonville Company, New York, $8809.50.

The Bureau of Supplies and Accounts, Navy Department, Washington, opened bids September 13, as follows:

Class 41, one set of plate bending and flanging rolls: Bidder 15, the Bethlehem Steel Company, South Bethlehem, Pa., $41,945; 62, the Hilles & Jones Company, Wilmington, Del., $16,875; 96, the Niles-Bement-Pond Company, New York, $15,720; 153, Wickes Brothers, Saginaw, Mich., $18,949.

The Isthmian Canal Commission, Washington, opened bids September 20, under circular 603, class 4, for two motors as follows: Bidder 7, the General Electric Company, Schenectady, N. Y., $4670.

As yet no definite plans have been made by the Whitaker-Glessner Company, Wheeling, W. Va., for the building of an open hearth steel plant, to comprise two 60-gross ton open hearth furnaces, a blooming mill and sheet bar mills. It will probably be some time until the company decides whether to go through with the project or not.

Iron and Industrial Stocks

NEW YORK, September 28, 1910.

While the stock market has not shown much activity, prices have displayed considerable strength during the week under review. A general advance in prices occurred last Wednesday, following the publication of a decision favorable to the railroads in the Minnesota rate case. Further strength was imparted on succeeding days by announcements that labor organizations would back up the railroads in their efforts to secure permission to advance freight rates. The remarkable prolongation of favorable weather for the ripening of crops was also a strengthening influence, as a record corn crop now seems absolutely certain. The range of prices on active iron and industrial stocks from Wednesday of last week to Tuesday of this week was as follows:

Beth. Steel, com...	27 - 28¾	Republic, pref.....	91¼- 92⅝
Beth. Steel, pref...	58⅝- 59⅞	Sloss, com.....	54¼- 57
Can, com.....	8 - 8¼	Sloss, pref.....	114¼
Can, pref.....	66⅜- 67¾	Pipe, pref.....	56 - 57½
Car & Fdry, com..	46 - 47	U. S. Steel, com...	66¾- 68¾
Steel Foundries...	41 - 43⅛	U. S. Steel, pref...	115¾-116¾
Colorado Fuel.....	29½- 31	Westinghouse Elec.	60¾- 63
General Electric...	143½-145	Am. Ship, com.....	75
Gr. N. ore cert....	54¼- 56	Am. Ship, pref....	108½-109
Int. Harv., com...	96½- 98	Chi. Pneu. Tool...	35½- 37
Int. Harv., pref...	119½-120	Cambria Steel.....	41½- 42
Int. Pump, com...	39½- 41¼	Lake Sup. Corp.....	21½
Int. Pump, pref...	82½- 84⅜	Pa. Steel, pref....	108 -108½
Locomotive, com...	36¾- 37⅞	Warwick	10⅝
Pressed St., com...	32½- 33⅝	Crucible St., com..	11¼- 12
Pressed St., pref.....	93⅛	Crucible St., pref..	72½- 74½
Railway Spr., com.	32 - 32¼	Harb.-W. Ref., com.....	32½
Republic, com.....	30½- 32½		

The annual report of the Westinghouse Air Brake Company, covering the fiscal year ending July 31, 1910, shows that, after the payment of dividends totaling 20 per cent. and liberal appropriations for improvements and depreciation, about $1,400,000 was carried to surplus, which now stands at $6,931,760.64. In addition to this surplus the balance sheet shows a depreciation reserve fund of $800,000 and an employees' pension fund of $129,444.80.

The Midland Steel Company, Pittsburgh, operating the Midland blast furnace at Midland, Pa., has sold $750,000 of 6 per cent. bonds, to retire outstanding obligations and provide additional capital for improvements. It intends to develop some coal property across the Ohio River from its furnace, washing the coal at the mines and carrying it across the river on aerial tramways.

Dividends.—The New York Air Brake Company has declared a quarterly dividend of 1½ per cent., payable October 28.

The Nova Scotia Steel & Coal Company has declared a quarterly dividend of 1¼ per cent. on its common stock, an increase of one-quarter of 1 per cent. over the last payment, placing the issue on a 5 per cent. per annum basis; also the regular quarterly dividend of 2 per cent. on its preferred.

The Yale & Towne Mfg. Company has declared a quarterly dividend of 1½ per cent. and 1 per cent. extra, payable October 1.

The Union Switch & Signal Company has declared the regular quarterly dividends of 3 per cent. on its preferred and 3 per cent. on its common stock.

The Westinghouse Electric & Mfg. Company has declared a quarterly dividend of 1¾ per cent. on the first preferred, payable October 15; also 8¾ per cent. on account of back dividends, payable 3½ per cent. October 5, 3½ per cent. January 15 and 1¾ per cent. April 15.

The Wheeling Steel & Iron Company, Wheeling, W. Va., has declared a quarterly dividend of 2 per cent., payable October 1.

The Nicholson File Company has declared the regular quarterly dividend of 4 per cent., payable September 30.

The American Iron and Steel Institute at Pittsburgh.—Referring to the visit of the American Iron and Steel Institute to Pittsburgh, October 20 and 21, a Committee of Arrangements has been appointed, consisting of W. L. King, vice-president of the Jones & Laughlin Steel Company, chairman; A. C. Dinkey, president of the Carnegie Steel Company, and T. W. Guthrie, president of the Republic Iron & Steel Company. This committee has appointed a subcommittee, which will have in charge the preparation of a programme. It is proposed to have an excursion up the Monongahela River, and also to visit a number of the leading manufacturing plants.

A Canadian Experimental Ore Concentrating Plant.—The Mines Branch of the Canadian Department of Mines, of which Dr. Eugene Haanel is director, is installing an experimental testing plant in Ottawa for the concentration of magnetic ores. It will consist of a standard Gröndal concentrating unit, comprising an ore crusher, ball mill and two Gröndal magnetic separators operating in tandem, with a capacity of 2 to 4 tons of crude ore per hour. Tests will be carried through for the determination of the following points: 1. Extent of crushing required to raise the iron content of the crude to 65-70 per cent. in the concentrate. 2. Extent of crushing required to depress sulphur, phosphorus or titanium content to percentages acceptable to furnacemen. 3. Number of tons of crude that are required to produce 1 ton of concentrate. 4. Power consumed per ton of crude ore concentrated. 5. Cubic feet of water used per ton of crude ore concentrated. It is expected that the plant will be ready for operation about the first week in November, 1910. Tests will be made free of charge on Canadian ores, but it is required that shipments shall be delivered, carriage paid at the testing plant at Ottawa.

The Increased Use of Cement

More cement was made and used in the United States in 1909 than in any preceding year and the price per barrel was lower than ever before, says a report by E. F. Burchard prepared for the United States Geological Survey. The production in 1908 was 52,910,925 barrels, valued at $44,477,653; the production in 1909 was 64,196,386 barrels, valued at $51,232,979. The increase was mainly in the output of Portland cement—62,508,461 barrels, valued at $50,510,385, as against 51,072,612 barrels in 1908, valued at $43,547,679. The output of natural and puzzolan cement formed only a small percentage of the total cement production.

The average price of Portland cement per barrel in 1909 was less than 81 cents; the average price per barrel in 1908 was 85 cents. Portland cement cost $3 a barrel in 1880, but by reason of improvements in method of manufacture it can now be profitably sold for 80 cents a barrel.

In 1909 there were 103 Portland cement plants in operation, an increase of five over the number working in 1908. Of these plants 21 were in Pennsylvania, 12 in Michigan, 10 in Kansas, 8 in Ohio, 7 in New York, 6 in Indiana, 5 in Illinois and 5 in California.

The strike of coal miners in the Southwestern field was ended September 18, when an agreement was made with the operators. The miners receive an increase of 5.55 per cent. on day work, dead work and yardage; an increase of 3 cents a ton on shooting coal, and an increase of 5 cents a ton on long wall work. A penalization clause provides that when the operators close a mine they shall pay the men $1 a day each during the time it is closed, and the miners agree each to pay the operators 50 cents a day for the time they cause a mine to be closed. The strike has continued more than five months.

The syndicated steel works of Austro-Hungary made practically the same output of manufactured products in the first seven months of 1910 as in the corresponding period of 1909—353,741 tons this year as against 356,876 tons last year. The total of bars and shapes was 202,218 tons this year, against 182,948 tons, and of rails, 46,289 tons, against 64,190 tons.

The National Iron & Steel Company, Houston, Texas, has purchased from the San Antonio & Aransas Pass Railroad 100 miles of 52-lb. relaying steel rails, which are being released on the main line between Kenedy and Houston. The railroad mentioned is laying new 75-lb. rails, bought from the Tennessee Coal, Iron & Railroad Company.

Philadelphia Foundry Foremen's Banquet

The Associated Foundry Foremen of Philadelphia and Vicinity held their first annual banquet at the Hotel Bingham, Philadelphia, Pa., on the evening of September 24. Covers were laid for over 100 members and guests. At the speakers' table were seated Clarence R. Brown, president of the association, who acted as toastmaster; Mayor John E. Reyburn of Philadelphia; Rev. John R. Davies, D.D.; Thomas Devlin, president of the Philadelphia Foundrymen's Association; George Benkert, treasurer of the Associated Foundry Foremen; Abram C. Mott of the Abram Cox Stove Company, Louis G. Amonson, William Adams, Alexander Naye and A. A. Miller, *The Iron Age*.

President Brown, in beginning the post-prandial programme, stated that the object of the association was for the betterment of its members in their daily work, that it had no interest in the question of labor, but rather gave its full attention to matters of research in connection with foundry interests, methods and practice. Rev. Dr. R. Davies made a forceful address on "What Does the Present Growth of Socialism Mean?" He reviewed briefly the history and growth of the socialistic movement, and pointed out methods by which its advancement could in a measure be retarded. Mayor Reyburn responded to the toast "What Would Happen to Philadelphia if All Smoke Were Banished?" He said if banishing smoke would mean the curtailment of industry and the removal of foundries and manufacturing plants from the city, we would keep the smoke and be glad to see it. Abram C. Mott followed, responding to the toast "An Ideal Foundry Foreman." He said, in part, the ideal foundry foreman is a rare article, for the reason that as soon as he reached that point he no longer remained a foreman but became an employer. The disposition of most foremen was to plod along, rather than develop betterments for their employers and themselves, and it was a difficult task to bring them to the ideal stage. He contradicted the statement that business conditions were so changed that advancement was almost impossible, saying that a better opportunity never existed for the advancement of the individual with skill and ability. This reasoning he deduced from the fact that organized labor eliminated 90 per cent. of the workmen from competition, saying that "The organizations of the working men prohibit the aggrandizement of the individual, but encourage in the strongest manner the aggrandizement of the whole. This makes the chance for the ambitious able man, which never before existed, and it is well for you to have your foot on the ladder, to take cognizance of it and recognize that practically you have a clear field and your future lies with yourself, and will be whatever you choose to make it, as this condition of affairs makes it almost impossible to secure an able foundry foreman from the rank and file of molders. This is sad, but true." Louis S. Amonson, president of the People's National Fire Insurance Company, spoke on "Fires and Their Causes."

Souvenirs distributed to the diners consisted of cast iron dragon candlesticks, jointly contributed by the Associated Foundry Foremen, Fairmount Foundry Company, Union Machine Works & Iron Foundry and E. E. Brown & Co.; metal ash trays, the J. W. Paxson Company; calipers, S. Obemayer & Co.; pocketbooks, Tabor Mfg. Company; cast iron paper clips, Independence Mfg. Company; steel rules and case, Pettinos Bros.

The officers of the association are as follows: President, C. R. Brown, E. E. Brown & Co.; vice-president, W. P. Cunningham, Pencoyd Iron Works; treasurer, George Benkert, Fairmount Foundry Company; secretary, D. M. Kittinger, Pencoyd Iron Works. The committee having the arrangements for the banquet in charge consisted of A. J. Wallace, Matthew Addy & Co.; J. Whitehead, Abram Cox Stove Company; George Benkert, Fairmount Foundry Company; George Moore, J. W. Paxson Company; Thomas Smith, Midvale Steel Company; Thomas Livezey, Haines, Jones & Cadbury Company, and F. Robinson, W. C. Robinson & Sons Company, together with the president and secretary as ex-officio members.

The Jamison Coal & Coke Company

Through the courtesy of W. A. Johnson, general sales agent of the Jamison Coal & Coke Company, Pittsburgh, a representative of *The Iron Age* recently inspected several of its coke and coal plants located in the Greensburg field. The company was organized and incorporated in 1892. It has at this time about 6000 acres of coal lands, lying between the Connellsville region on the east and the Irwin gas belt on the west, all three districts geologically belonging to the Pittsburgh vein. Its mines and ovens are on the Alexandria Branch of the Pennsylvania Railroad, which leads off the main line of that road at Donahue Station in Westmoreland County, Pa.

The location and equipment of its plants are as follows: No. 1 plant at Luxor, Pa., contains two slope mines equipped with rope haulage. The capacity of the mines is 2000 tons of coal per day. This plant also has 400 coke ovens. It is equipped with a Luhrig jig and coal washer to wash coal for the coke ovens. No. 2 plant is at Hannastown, Pa., this being a shaft mine and equipped with compressed air haulage. The mining is done at this works by pick and machine, the capacity of the mine being 2500 tons of coal per day. This plant has 516 coke ovens, and has a coal washer equipped with Stine jigs. No. 3 plant is located at Forbes Road, Pa., being a shaft mine, equipped with compressed air haulage, the coal mining being done by pick and machine. The capacity of this mine is 2500 tons per day. No. 4 plant is located at Crabtree, Pa., and has two slope mines, equipped with rope haulage from the bottom of the slopes to the tipple, and also equipped with compressed air haulage system. The capacity of these works is 4000 tons per day, the mining being done by pick and machine. This plant has 492 coke ovens, 70 of which are equipped to utilize waste heat to generate electric power. It also has a coal washer equipped with Luhrig jigs. No. 5 plant is located at Winthrop Station, Pa., being a drift mine with a capacity of 500 tons per day. It is equipped with rope haulage, all the mining being done by hand. No. 6 plant is located at Forbes Road, Pa., being a new slope mine, equipped with coal mining machines and rope haulage, the capacity being 1000 tons per day.

The coal production of the Jamison Coal & Coke Company for the past several years has been as follows: 1906, 2,266,500 tons; 1907, 2,400,600 tons; 1908, 2,429,000 tons; 1909, 2,608,200 tons. Its coke shipments were as follows: 1906, 474,000 tons; 1907, 554,900 tons; 1908, 538,000 tons; 1909, 682,700 tons. Its production of coal the first eight months of the current calendar year approximated 200,000 tons per month and its coke shipments for the same period were 451,000 tons.

As a matter of some interest, a statement is given below showing the payrolls of this company for the first eight and a half months of this year—January 1 to August 15. The average number of men employed in all departments during this period, including miners, drivers, washermen, machine shop men, coke drawers, coke loaders, day labor, &c., averaged 1600 to 1800 men, and the table gives a very complete statement of the compensation which the employees received in the period named. The table headed gross earnings shows the total amount of money earned by its employees

every two weeks, while the table headed net earnings shows the amount of cash paid to its employees by the company after all deductions were made for provisions, fuel, rents, tool sharpening, &c. The statement is as follows:

Period. 1910.	Gross.	Net.
January 1-15	$63,169.14	$43,268.02
January 16-31	70,736.00	50,594.21
	$133,905.14	$93,862.23
February 1-15	$70,399.23	$49,676.03
February 16-28	59,285.15	40,471.66
	$129,684.38	$90,147.69
March 1-15	$72,026.98	$51,590.38
March 16-31	71,660.77	49,411.05
	$143,687.75	$101,001.43
April 1-15	$64,517.23	$45,825.23
April 16-30	64,811.88	46,115.02
	$129,329.11	$91,940.26
May 1-15	$60,080.22	$43,413.96
May 16-31	64,119.67	46,584.41
	$124,199.89	$89,998.37
June 1-15	$62,321.89	$45,240.89
June 16-30	58,921.39	42,611.57
	$121,243.28	$87,852.46
July 1-15	$53,911.79	$38,567.34
July 16-31	60,734.03	44,958.31
	$114,645.82	$83,525.65
August 1-15	$56,479.01	$41,218.86

The figures indicate clearly that the reports printed in the daily press that the earnings of the miners employed by this company are all absorbed in charges for provisions, rents, fuel, tool sharpening, &c., are absolutely untrue.

The Detroit Seamless Steel Tubes Company Breaks Its Records

A few months ago the Detroit Seamless Steel Tubes Company, Detroit, Mich., made a complete reorganization of the administrative force from the superintendent down. Since that time, the company states, there has been an increasing output, and every previous record has been broken in all departments. The rate of increase runs from 10 to 25 per cent., and the owners feel as though they are making a record that is extraordinarily great at a time when the automobile business is slack and has a natural tendency to decrease the demand for their products.

The reorganization began with the appointing of W. H. Lantz of Detroit as superintendent. The other new appointees are: William H. Imhoff, head of the cold drawing department, secured from Shelby, Ohio, as was also his assistant, Robert Ihler; James Thompson, Detroit, superintendent of rolling mills; Charles Koelbel, Chicago, night foreman of the cold drawing department; Thomas W. Smythe, Detroit, general foreman; William Sythes, Detroit, night superintendent.

In an item relating to contracts secured from the Government by the Crucible Steel Company of America, Pittsburgh, printed in *The Iron Age* of September 22, the impression was given that the contracts included a number of 5 and 6 in. armor piercing projectiles. This is erroneous, the fact being that, in addition to securing orders for a large number of 12, 10 and 8 in. projectiles, the company received orders for a number of 5 and 6 in. guns, and not 5 and 6 in. projectiles.

The McKeesport Tin Plate Company, McKeesport, Pa., which completed 10 new tin mills at its plant several months ago, has under consideration the building of two more hot tin mills, but a definite decision has not yet been reached. The company now has a total of 20 hot mills, being the second largest independent tin plate concern in the country.

German Industry Disturbed

A cablegram from Berlin dated September 24, says: German industry is seriously disturbed by strikes and lockouts. Unless the disputes can be ended within the next few days 700,000 workmen will be idle. A little hope appeared to-day in the announcement that negotiations would begin Monday between the Association of Metal Employers and the Metal Trade Workers. An adjustment of the differences in this trade will have great influence upon the situation in allied industries. The total number of metal workers is close to 600,000. They have been financially assisting the striking shipbuilders, and to cut off this aid, the Association of Metal Employers recently decided to lock out 60 per cent. of its men unless the shipbuilders returned to work prior to October 8. In retaliation the employees voted to declare a strike of the other 40 per cent. in the event that the threatened lockout of 60 per cent. of their number was enforced. The textile manufacturers of Cottbus, Forst, Spremberg, Guben, Luckenwalde, Sommerfeld and Finsterwalde have notified their 25,000 employees that their mills will be shut down October 5 unless the striking spinners at Forst return to work next Tuesday. The 40,000 striking shipbuilders show no signs of weakening. The managing committee of the Socialist party is aiding in the support of the idle men.

Census Announcements

The Census Bureau is now rapidly giving out population statistics. Following are the figures for a number of cities:

City.	1910.	Gain on 1900.	Per ct. gained.
Fall River, Mass.	119,295	14,432	13.8
Cambridge, Mass.	104,839	12,953	14.1
Lynn, Mass.	89,336	20,823	30.4
New Bedford, Mass.	96,652	34,210	54.8
Salem, Mass.	43,697	7,741	21.5
Springfield, Mass.	88,926	26,867	43.3
Lawrence, Mass.	85,892	23,333	37.3
Haverhill, Mass.	44,115	6,940	18.7
Manchester, N. H.	70,063	13,076	22.9
Erie, Pa.	66,525	13,792	26.2
Altoona, Pa.	52,127	13,154	33.8
Lancaster, Pa.	47,227	5,768	13.9
McKeesport, Pa.	42,694	8,467	24.7
Dubuque, Iowa.	38,494	2,197	6.1
Fort Worth, Texas.	73,312	46,644	174.7
San Antonio, Texas.	96,614	43,292	81.2
Galveston, Texas.	36,981	Dec. 808	Dec. 2.1

About 30 members of the Detroit Engineering Society spent an enjoyable day in Cleveland, September 24, as the guests of the Cleveland Engineering Society. On their arrival the guests were escorted from the boat to special street cars and spent the morning in visiting the plants of the Warner & Swasey Company, Wellman-Seaver-Morgan Company, H. Black & Co. and the Newburg mills of the American Steel & Wire Company. Luncheon was served at the Euclid Club and in the afternoon the visitors were taken on an automobile ride through the parks and boulevards. The party was entertained at dinner at the Athletic Club and started home late in the evening.

The William Tod Company, Youngstown, Ohio, has installed one of its standard long cross head engines at the Andrews & Hitchcock blast furnaces, Hubbard, Ohio. Its dimensions are 49 and 96 x 60 in., and it will run with the 96 and 96 in. engine furnished last year as a disconnected compound. The new engine replaces a 42 and 84 x 60 in. old style poppet leather valve blowing engine, built by the William Tod Company in 1895, and which has been in continuous operation since that time, but is no longer suitable for the high pressures demanded by the new furnace.

Customs Decisions

Wrenches or Spanners

In sustaining a claim filed by Robert B. Ways, the Board of United States General Appraisers has decided that, under the terms of the tariff act of 1909, wrenches or spanners are entitled to entry at 45 per cent. ad valorem under the provision in the law for "manufactures of metal not specially provided for." The articles were assessed by the customs authorities under paragraph 198 of the new tariff as being "nippers and pliers of all kinds." Under this classification duty was exacted at the rate of 8 cents a pound and 40 per cent. ad valorem. The decision states that the claim of the importer appears to be well founded. It is held that they are not of the class of so-called "jaw" tools, for which provision is made in another paragraph of the law. The classification at 45 per cent. as claimed by the importer is accordingly sustained.

Carpenters' Pincers

A protest filed by Herman Hessenbruch against the assessment of duty at 8 cents a pound and 40 per cent. ad valorem on cheap carpenters' pincers is overruled. It was alleged by the importer that the articles should be allowed to enter at 45 per cent. as "articles of metal not specially provided for." The protest is held to be without merit.

Metal Articles for Demonstration Purposes

Metal articles used for demonstration purposes, and imported by C. H. Wyman & Co., are not to be regarded for dutiable purposes as "scrap," according to a decision handed down by General Appraiser Fischer. The articles in question are cog wheels showing a fracture or breakage clamped with an iron band and imported to show the Castolin process in brazing metals. Duty was exacted under paragraph 199 of the Payne act at 45 per cent. ad valorem as "articles of metal not specially provided for." The importer's claim for a duty of only $1 per ton as "scrap" is denied.

Ferroalloys

Lower duty is accorded various ferroalloys imported by J. W. Hampton, Jr., & Co. Duty was exacted at the rate of 20 per cent. as "unwrought metals not specially provided for." The importers claimed a rate of $4 per ton by similitude to ferromanganese. This claim the board sustains.

Railroad Equipment Orders.—The Carolina, Clinchfield & Ohio has taken bids on 250 box and 100 stock cars. The Winston-Salem Southbound will buy 100 box cars and 50 gondola cars. The New York Central has ordered 10 all steel postal and 10 all steel postal and baggage cars from the Pressed Steel Car Company. The Argentine Republic is reported to have placed orders for $1,400,000 worth of steel cars with two car companies in the United States. The American Locomotive Company has an order from the Chicago & Northwestern for 15 locomotives, which will be built at its plant on the North Side, Pittsburgh. The same company has booked 10 Mallet locomotives for the Central Railway of Brazil. The St. Paul & Des Moines has ordered three consolidation locomotives from the Lima Locomotive & Machine Company.

New England Boosters.—The Pilgrim Publicity Association, Boston, Mass., is conducting an active campaign in boosting New England. The association is largely composed of publicity men connected with manufacturing or mercantile establishments, all imbued with a high admiration for their section, who have united for the purpose of impressing the merits, advantages and resources of New England upon the country at large. The members of the association seize every opportunity to bring their views to the front, and not only on public occasions but privately to push with vigor the advocacy of New England interests. A publication is issued under the name of the Pilgrim Publicity Association *Bulletin*, of which the September number has just appeared. It bristles with strong points in favor of New England and displays cleverness and energy on every page. Special articles of high merit appearing in this issue are "Ages of Development," "The Yankee Knack," and "Ideals in Merchandise," all of which glorify New England.

A movement is on foot in Germany to persuade the Government to give notice to the United States of the termination of the patent agreement made February 23, 1909, on the ground that it is detrimental to the interests of German inventors, patent owners and German industry generally, or to enact a revised patent law which shall deprive Americans of privileges they now enjoy under the international agreement. It is surmised that German manufacturers are desirous of the establishment of a provision requiring Americans taking out German patents to manufacture the patented articles in Germany.

George J. Hagan, furnace engineer and contractor, People's Bank Building, Pittsburgh, recently closed a contract with the Canton Sheet Steel Company, Canton, Ohio, for four Bailey combination sheet and pair furnaces. Later the number of furnaces on this contract was increased to six. A second contract has been awarded to Mr. Hagan by the same company for 18 American stokers to be used in firing sheet and pair furnaces. Mr. Hagan is the sales representative for the American Stoker Company in the Pittsburgh district.

The Thomas Iron Company held its annual meeting September 13 at Hokendauqua, Pa. The attendance of stockholders was unusually large, over 48,000 shares out of the total of 50,000 shares being represented. The financial statement presented by the officers was exceedingly satisfactory. The old Board of Directors was re-elected, and the following officers, also re-elected, were chosen for the coming year: B. F. Fackenthal, Jr., president and general manager; William H. Hulick, vice-president; James W. Weaver, secretary and treasurer.

The National Gas & Gasoline Engine Trades Association will hold its next convention in Racine, Wis., December 12 to 15, inclusive. The convention will be held in Dania Hall, and the usual exhibition arrangements will also take place in that hall. O. C. Parker, president of the Reliance Iron & Engine Company, Racine, has been appointed chairman of the Local Committee, and will have entire charge of the allotting of exhibition space. Members will be charged $10 for space and nonmembers $15.

The Cambria Steel Company, Johnstown, Pa., is rapidly finishing the building of a 66-in. pipe line, 14 miles long, to carry water to its works from an 11,000,000-gal. reservoir located on Quemahoning Creek. It is making progress on the building of the new wire plant and is also increasing the capacity of its merchant bar mills.

Charles M. Pepper of the Bureau of Trade Relations of the State Department at Washington, is making a tour of Canada's chief cities, gathering data bearing on the negotiations that will soon be taken up for reciprocity between Canada and the United States. The situation as to coal and pulp wood is of special interest in this connection.

Personal

W. G. Ireland, formerly chief chemist and manager of the foundry department of Gulick-Henderson & Co., engineers and chemists, Pittsburgh, is now connected with the sales department of the Jamison Coal & Coke Company, Pittsburgh. J. F. Esperon, formerly of the American Radiator Company, Pittsburgh, succeeds Mr. Ireland in his old position.

Karl Nibecker of the sales department of the Southwark Foundry & Machine Company, Philadelphia, has been transferred to the company's office in the Frick Building, Pittsburgh, where he will be sales representative for that district, succeeding Herman E. Beyer, recently resigned and now general manager of the Birmingham Machine & Foundry Company, Birmingham, Ala.

Wm. H. Baldwin, for a number of years an officer of the Ohio Steel Company, Youngstown, Ohio, and later of the National Steel Company, recently concluded his special work for the Bureau of Corporations at Washington, in connection with the investigation of the steel industry and will spend some months in Europe.

E. C. Felton, president of the Pennsylvania Steel Company, has returned to his office in Philadelphia after a vacation of several weeks spent in Massachusetts.

Charles R. Stevenson has been elected secretary and auditor of the E. R. Thomas Motor Company, Buffalo, N. Y. He has also been elected a member of the Executive Committee and will become one of the directors of the company. For the last seven years he has been a member of the firm of Miller, Franklin & Stevenson, business economists and public accountants of New York, Boston and Chicago, previous to which he was assistant metallurgical engineer of the Homestead Works of the Carnegie Steel Company.

H. B. McMaster, who as assistant manager of sales has had charge of sales of wire products for the Youngstown Sheet & Tube Company, has resigned. He was formerly secretary of the General Fireproofing Company, Youngstown, Ohio.

President E. A. S. Clarke of the Lackawanna Steel Company, announces that Marshall Lapham has resigned as comptroller of the company, and L. W. Hesselman has been appointed to the position, effective September 22.

A. R. Reiche, president of the Orenstein-Arthur Koppel Company, manufacturer of light steel dump-cars and portable tracks, Machesney Building, Pittsburgh, sailed from New York for Germany, September 17, expecting to be absent several months. While abroad he will consult with the general officers of the company, who are located in Berlin, with regard to the enlarging of the American plant, which is at Koppel, Pa., about 30 miles from Pittsburgh, on the Pittsburgh, Fort Wayne & Chicago Railroad.

E. G. Richards, who was formerly with the Dodge Mfg. Company, for about six years superintendent of its iron department, and also superintendent of the Berlin Machine Works, Beloit, Wis., for 14 years, has become general manager of the Hilliard Clutch & Machinery Company, Elmira, N. Y., and will hereafter devote his entire time to the manufacture and sale of the Hilliard & Richards high speed friction clutches and cut-off couplings.

H. A. Higgins, general manager of the Standard Tool Company, Cleveland, Ohio, returned home September 20 from a three months' trip to Europe.

William L. Hirsch, sales manager of the American Steel & Wire Company, Frick Building, Pittsburgh, has gone up the lakes on a pleasure trip, to be absent about 10 days.

J. C. Neale, assistant sales manager of the Carnegie Steel Company, Pittsburgh, is in Montreal this week, in connection with the letting of the contract for the building of the Quebec Bridge, bids on which are to be opened October 1.

Effective October 1, some changes will take place among officials of the Pressed Radiator Company of America, Bailey-Farrell Building, Pittsburgh. J. K. Frye, who has been general manager for some time, will become president and general manager, succeeding H. W. Armstrong, president, who resigned some time since. A. M. Pearson, formerly sales manager, will be secretary and treasurer, and J. F. Seigel, formerly sales manager in Chicago, will be general sales manager, with headquarters in the Pittsburgh offices.

C. H. Conover, vice-president of Hibbard, Spencer, Bartlett & Co., Chicago, landed at New York September 22 on his return from a three months' vacation in Europe.

G. H. Jones, vice-president of the Inland Steel Company, Chicago, has returned from a visit to his old home in England and a short tour of the Continent.

The Morrow Mfg. Company, Elmira, N. Y., announces that J. M. McDowell, formerly president and manager of the Russell Drill Chuck Company, is now associated with the first named company as general sales manager of the drill chuck department. Long experience in the manufacture of drill chucks qualifies him as an expert in that line.

The Tariff Board Confers with Manufacturers.—The Tariff Board has held a number of conferences at Washington the past week. Henry R. Towne, Yale & Towne Mfg. Company, who has been active in the Tariff Commission Association, discussed with the board the matter of getting data from manufacturers and the belief was expressed that conditions do not require the enforcement of special measures to compel the giving of information, the board feeling that it will be able to secure the facts through the co-operation of manufacturers. The procedure in making inquiries as to metal products has been considered, and E. J. Spilsbury, mining engineer, New York, has been retained by the board for advice in connection with the metal industries. It is believed that in view of the time required for the investigations of the board action on the revision of certain tariff schedules will be deferred until the regular session of the next Congress, beginning December, 1911, when the members elected this fall take their seats.

The National Association of Manufacturers, of which John Kirby, Jr., is president, has removed its general offices from 170 Broadway to 30 Church street, New York. The association's growth during the past few years necessitated more commodious quarters than could be obtained at the Broadway address. The new location is adjacent to steamship piers and is directly connected by the Hudson River tunnels with the great railroad systems of the country.

The American Railway Association reports that the net surplus of idle freight cars on railroads in the United States and Canada, September 14, was 47,076, a decrease of 3653 in two weeks. In the previous period of two weeks the reduction was 22,950 in the number of idle cars, or 30 per cent.

The Pittsburgh Testing Laboratory, Pittsburgh, Pa., has moved its New York office from 1 Liberty street to 50 Church street, Hudson Terminal Building. The company's interests in New York and New England have been placed in the hands of Wm. F. Zimmermann, second vice-president of the company.

The German Iron Market

BERLIN, September 8, 1910.

The fate of the new Pig Iron Syndicate is still uncertain. The negotiations with the Luxemburg-Lorraine group of furnaces have not yet led to positive results. A meeting of furnace owners there was held yesterday for the purpose of inducing the outsiders to join the local organization, which might then be in a position to reach an understanding with the syndicate. This meeting, however, did not accomplish anything, owing to the fact that the terms offered by the syndicate were regarded as too hard; hence an adjournment for a week was voted. Whether an arrangement shall then be agreed upon is more than doubtful.

Meanwhile the furnaces of the Siegerland region are selling steelmaking qualities of pig for the first quarter of 1911 at 59 to 61 marks, and the syndicate, which has not yet opened 1911 business in general, is meeting these Siegerland offers with offers 1 mark lower. In view of this price war in miniature it looks more doubtful than ever whether the Siegerland furnaces will enter the syndicate. The strongest company of that region, the Geisweider Eisenwerke, explains in its annual report its reasons for standing aloof. It says that the allotment offered it was too low, whereas the big steel companies of the lower Rhine and Westphalia, which are running the syndicate, made unduly large allotments to themselves. The report adds that the company is at present consuming in its own mills all the iron its one furnace turns out, but after the completion of its second furnace it will resume the sale of pig. The company raised its dividend by 2 per cent.

Continued Improvement in Trade

The report on the fortnightly trading on the Düsseldorf Exchange last week said that the improvement in the iron market continues. This agrees with the statements of the newspaper market reviewists, though some of these are rather cautious in expressing themselves as to the permanent character of the improvement. The doubters assign considerable importance to the reports from the American market, holding that there can be no far-reaching recovery in Germany so long as the American situation is so unsatisfactory. At any rate, it seems certain that any considerable revival of business in America would now have a most invigorating effect upon the German market.

The autumn business has become more active and prices are firmly held. The general tone of the market has been further improved by the rising prices of iron and steel in Belgium and England. The volume of orders on hand with the mills underwent a marked increase in August, and deliveries on contracts are being called for at a regular rate. Foreign business is pretty good, particularly with South American countries and East Asia.

A slightly firmer tendency is noted in the market for scrap. Ore prices continue firm. The imports of ores are still rather light, the total for August having been 1,016,800 tons, against 1,171,500 tons in August, 1909.

The steel market shows a satisfactory aspect in most of its departments. In semimanufactured steel buying has been very active since business for the fourth quarter was opened several weeks ago; but some of the reports mention that a quieter tone has commenced within a week, home consumers having provided for the bulk of their requirements. England made large purchases in this specialty, and some other foreign countries also. In structural shapes a slight improvement in the demand for the heavier forms is noted, especially from the foreign market. There is an active demand for supplies on the part of bridge building concerns and construction shops.

In bar iron, buying has been at a brisk pace since the price was marked up. Dealers had allowed their stocks to run low, expecting to get better prices, but since the higher price was adopted they have abandoned such hopes and are replenishing their stores as fast as they can. The reports differ as to prices. While some authorities claim that the mills are adhering strictly to the new price of 112 to 114 marks, others assert that much of the recent business has been done at 110 marks. A similar discrepancy is to be noted in the reports on the foreign business in bars. According to one report, the mills are strictly demanding 100 marks per ton f.o.b. Antwerp, but another report, emanating from Essen, declares that the foreign price is only 98 marks, which, however, is an improvement upon the prices of two or three weeks ago. Business is also better in iron bars.

In heavy plates business remains brisk, despite the strike of the shipbuilders. Considerable new business from abroad, presumably England, has come in. The demand for thin plates is also improving. Other departments of the market report normal conditions, with little change since last week. The German locomotive shops have had a considerable improvement in their foreign business this summer. The exports in July reached 3500 tons, which compares with only 2000 tons shipped abroad in July, 1909.

The latest news from the Belgian market is to the effect that the improvement continues to gain momentum. At the end of last week an advance of 2.50 francs in the home price of bars and plates was reported, and a Brussels dispatch of to-day, says that the export price of bars, both of soft steel and iron, has again risen by 1 franc, while plates are put up 1 to 2 francs. Reports from Russian Poland, across the Silesian frontier, indicate that a remarkable revival of activity has set in there.

Industrial Notes

A number of German iron companies have within the past few days announced good dividend distributions for the past business year. The Hasper Company pays 8 per cent. on a capital of 10,000,000 marks, as compared with 5 per cent. on 5,000,000 for last year; its net earnings rose from 262,700 marks to 1,094,000 marks. The Rheinische Stahlwerke to-day announced a dividend of 7 per cent., against 6 per cent., and the Mannesmann Tube Works of Düsseldorf pays 12½ per cent., the same as last year. The stock market is excited over the probable dividend of the Phönix Company. The estimates of it have been steadily moved up till it now stands at 15 per cent., against 9 per cent. for last year. The market for iron shares is pretty strong.

The big Phönix Company, whose works are scattered among several towns in the West, has decided to erect another blast furnace at Ruhrort. Its battery of furnaces there is not able to supply its steel mills at that place and the new furnace will obviate the necessity of buying iron in the market, or shipping it from another of its furnaces elsewhere.

According to a recent dispatch, 5000 tons of spiegeleisen was sold to American buyers at Siegen in August.

BERLIN, September 15, 1910.

When it is stated that the production of pig iron in August, 1,262,804 metric tons, beat all previous records, it might seem equivalent to saying that the German iron industry is enjoying greater prosperity than ever before. But this is not the case. The industry is doing well, but it is not doing its best. For example, the big Steel Syndicate running on an average restriction of about 20 per cent. in what are called class A products (steel rails, structural shapes, and semimanufactured steel); in August the restriction was about 14 per cent. The rail trade, so far as home consumption is concerned, remains very unsatisfactory; but foreign orders about make up for the lack of home business and caused a big gain in the August shipments. In structural shapes business continues unsatisfactory, despite the fact that the lock-out in the building trade was settled nearly three months ago. This department of the industry has to contend with the hard fact that concrete construction is largely doing away with the use of heavy beams in building houses; but this is helping the manufacturers of steel bars, since these are called for in increasing quantities for reinforcement. In steel billets, on the other hand, the mills are well employed, The shipments in August amounted to 99.9 per cent. of the allotments. The total shipments of these three classes of products in August reached 446,589 tons, or about 52,800 tons more than in July.

Trade Grows Quieter

This week indicates that a quieter tendency has set in. Consumers have mostly provided for their requirements for the rest of the year and manifest no particular inclination to make longer engagements. The unsolved problem of the new Pig Iron Syndicate continues to weigh upon the general position of the trade. The beginning of business on 1911 contracts was again postponed with the hope that an arrangement with the Luxemburg-Lorraine group might be effected. The outlook for a favorable result of the pending negotiations, however, is reported to be very bad. It appears that the Essen Syndicate is offering the southwestern furnaces a considerably smaller proportion of the total trade in pig iron than they think they are entitled to; hence, they refuse to come to terms on the basis offered. The situation is, therefore, precisely like that which caused the failure of the negotiations with the Siegerland group some weeks ago. There is naturally very little business in pig, in view of the conditions just mentioned. Dealers are selling occasional amounts for delivery before the end of the year. Notwithstanding the fact that production is at high-water mark there are still a dozen or more furnaces in the Rhenish-Westphalian district that have not been put into blast during the present period of prosperity; and yet a number of new furnaces are projected in that region.,

The latest pig iron quotations in western Germany are as follows; Spiegeleisen containing 10 to 12 per cent. manganese, 63 to 65 marks at Siegen; high grade puddling, 58 to 60 marks; steel making iron, 59 to 60 marks at Siegen and 62 to 63 marks in the Rhenish-Westphalian district; German Bessemer, 63 to 64 marks; Thomas (basic), 53 to 55 marks at Luxemburg; German No. 1 Foundry, 63 to 65 marks; No. 3, 62 to 64 marks; German hematite, 65 to 67 marks.

In bars a quieter tone is reported, the requirements of consumers for the next three or four months having been provided for. Dealers continue to show a waiting attitude.

The Manufacture of Rolled H-Beams*

Steps in the Evolution of the Universal Mill for the Rolling of Structural Shapes—The Work of American and German Inventors

BY G. E. MOORE.

Many inventors have devoted time and brain work to the perfection of the means for manufacturing rolled beams, and in late years more particularly to the manufacture of so-called H-beams, or beams having flanges of great width as compared with the hight of the beam. With ordinary two or three high mills having grooved horizontal rolls only, the practical economic limit appears to have been reached in the case of the commercial standard sections; but beams of much larger section than these, and more particularly beams having relatively far wider flanges, are rolled more or less successfully in universal mills which have both horizontal and vertical rolls. Moreover, with a universal mill a more economic distribution and better working up of the metal appears to be attainable than is the case with ordinary grooved rolls. Using grooved rolls only, the width of flanges which it is possible to roll is limited, not only by the necessity of using rolls of very large diameter to accommodate the deep grooves necessary to produce wide flanges, and still leave sufficient metal in the rolls to give the necessary strength, but also by the necessity of making such grooves with a very great inclination of their sides in order to avoid the tendency for the metal to become jammed therein, which results in the flanges being weakened, if not torn away altogether.

Universal mills having a pair of horizontal and a pair of vertical rolls all in the same vertical plane are now in operation, adapted to roll beams of much larger sizes than those hitherto called for, or, say, up to about 30 in. high by 15 in. wide. But the practical difficulties which had to be overcome to insure success in the production of such sections have necessarily involved a complication of the machinery used, as compared with the mills customarily used to roll ordinary standard sections.

The difficulty of working up the metal in a complicated section, such as an H-beam undoubtedly is, is to secure sufficient uniformity to avoid undue internal stresses, having regard to the comparative thinness of the metal in the web and flanges necessary to enable them to be manufactured sufficiently cheaply to compete commercially with built-up beams. Another difficulty is that of producing finished beams of sufficiently good appearance, free from fins, eccentricity of web and other irregularities. These are the chief points which the inventor has had to watch, and to overcome which still taxes his ingenuity.

In the succeeding pages the author proposes first to describe briefly a few of the characteristic types of machines disclosed by different inventors through the medium of the Patent Office of the United States of America, to offer a few remarks thereon, and finally to present his own suggestions for criticism.

An Early German Invention

Hugo Sack, patent No. 365,100 (1887), describes a single reversing universal mill having a pair of horizontal rolls and a pair of vertical rolls, with their axes all lying in one vertical plane, the two horizontal rolls being both alike but individually unsymmetrical, while the two vertical rolls are both different but individually symmetrical (Figs. 1 and 2). Thus the gaps between the rolls are on one side at the extreme outside edges of the flanges and on the other side at the extreme inside edges of the flanges. After each pass between the rolls the bar is tilted half round and the positions of the flange edges relatively to the position of the gaps between the rolls are reversed; the edges which in one pass were adjacent to the gaps between the rolls are, in the subsequent pass, adjacent to the closed corners of the rolls. In this way the surplus metal extruded between the gaps of the rolls in one pass is rolled down and suppressed in the next.

The use of a single set of rolls for the reduction of the preliminary bar into a beam renders reversing and adjustment of the rolls after each pass necessary, and it is impracticable, with the rolls as described by Sack, and illustrated, to have a closed pass between them. At best gaps are left at the corners of the flanges, which gradually become narrower as the pass is reduced and the blank rolled down, until the final adjustment is made prior to the final reduction, when the gaps are reduced to a minimum. Nor, even at the final pass is it practicable to have an entirely closed pass, because, although the rolls may be adjusted prior to the final reduction so that they touch and the pass is practically closed, yet directly the bar enters the pass deflection takes place which opens out the pass, and gaps are left between the rolls when fins will be formed on the bar.

With this method the section is developed with

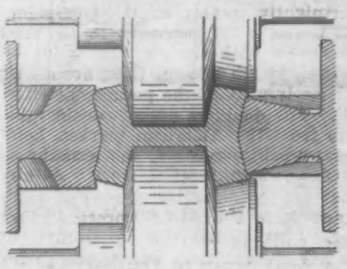


Fig. 1. Roughing Rolls, Open.

Fig. 4. Two-High Rolls, Open.

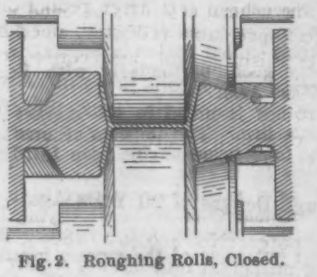


Fig. 2. Roughing Rolls, Closed.

Fig. 5. Two-High Rolls, Closed.

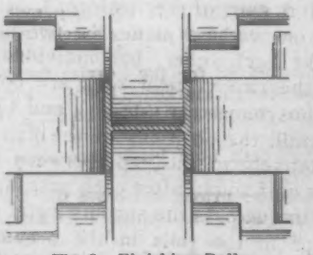


Fig. 3. Finishing Rolls.

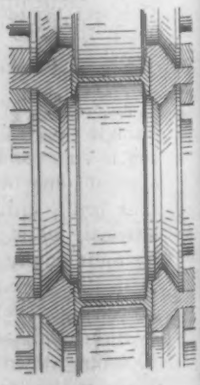


Fig. 6. Three-High Rolls.

* A paper read at the meeting of the Iron and Steel Institute at Buxton, England, September, 1910.

flanges outwardly bent from the longitudinal center line, in order to obtain a better rolling effect with the horizontal rolls upon the flanges, and this feature renders necessary the use of a finishing set of rolls (Fig. 3) through which the bar is passed after having been completely reduced in the previous set. The pass between these rolls need not be adjustable excepting to compensate for wear or displacement, and may be fixed in the ordinary way. Its shape is exactly that

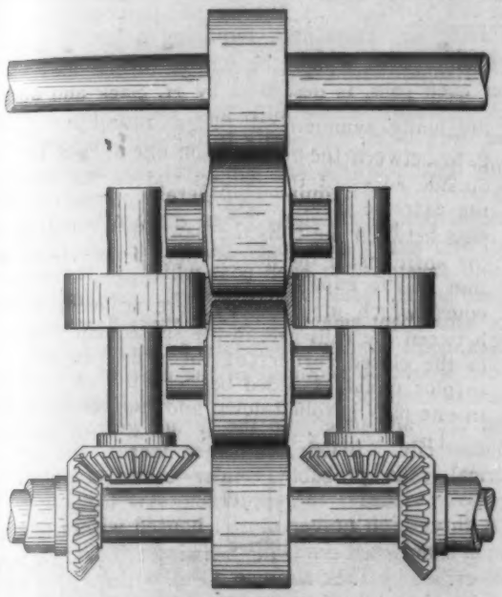


Fig 7.—First Mill of Kennedy and Aiken.

of the section required, so that the effect of passing the bar through these rolls is merely to square up the flanges and give a final finish to the bar, particularly at the corners of the flanges, where traces of surplus blank metal may have been left after reduction in the previous mill. No appreciable reduction need be given to the bar in the finishing roll, and consequently no appreciable deflection of the rolls takes place when the bar is passed through them; the pass, therefore, remains practically closed, and the formation of fins on the finished bar is avoided.

Pittsburgh Designs of 20 Years Ago

J. S. Seaman, patent No. 400,495 (1889), describes a single reversing universal mill having a pair of horizontal rolls and a pair of vertical rolls, with their axes all lying in one vertical plane, the two horizontal rolls being unlike each other, but individually symmetrical, while the two vertical rolls are both alike, but individually unsymmetrical (Figs. 4 and 5). Thus, as in the Sack mill, the positions of the flange edges are changed relatively to the gaps between the rolls by tilting the bar half round after each pass, and thereby rolling down in one pass the surplus metal extruded between the gaps in the rolls in the previous pass. Or he proposes to attain the same result, without tilting, by using a three-high universal mill having rolls of exactly similar construction to those described above, but with the top and bottom rolls alike and the center roll different (Fig. 6).

In this mill the bar is developed with the straight flanges lying in a plane at right angles to the web, so that no subsequent straightening is required, and the bar may be finished in the one mill only.

Julian Kennedy and the late Henry Aiken, patent No. 410,107 (1889), describe a series of mills comprising three different types, each having a function distinct from that of the others. The first is a reversing, roughing, universal mill, having adjustable horizontal and vertical rolls, with their axes all lying in one vertical plane (Fig. 7). In this it is proposed to reduce the ingot or bloom into approximately the finished form of beam required, by passing it several times backwards and forwards through the rolls, and adjusting the latter together after each pass. When the bar emerges finally from the mill the sides and edges of the flanges are still rough, and it has, consequently, to undergo a further operation in the next mill.

The second mill (Fig. 8) is a nonreversing universal mill having nonadjustable horizontal and vertical rolls with their axes all lying in one vertical plane and intended to reduce the sides of the flanges only. It is proposed to pass the bar through these once, and in order to secure effective co-operation between these and the subsequent rolls, and to prevent the formation of fins, it is proposed to roll slight depressions in the center of each flange which the next operation will obliterate.

The third mill is a nonreversing two-high mill having nonadjustable horizontal rolls only, intended only to reduce the edges of the flanges (Fig. 9). It is proposed to pass the bar through them once to bring it to its finished form and to shape the edges, whereby the slight depressions formed along the centers of the flanges in the previous mill will be exactly filled in this operation, and no fins will be left on the finished bar.

The York and Butz Mills

L. D. York, patent No. 410,724 (1889), covers a single reversing universal mill having a pair of horizontal rolls and a pair of vertical rolls, with their

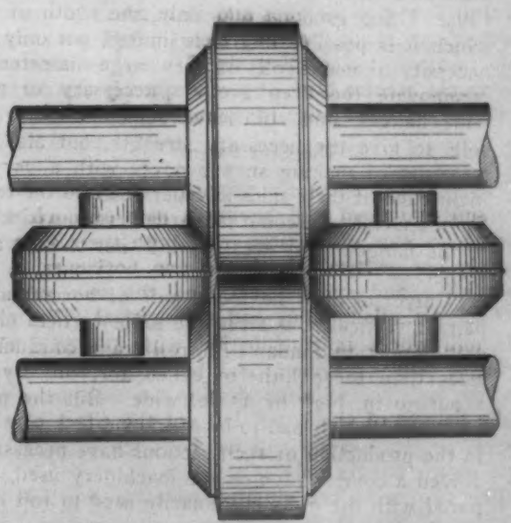


Fig. 8.—Second Mill of Kennedy and Aiken.

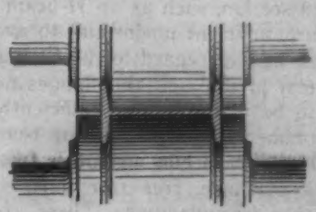


Fig. 9.—Third Mill of Kennedy and Aiken.

axes all lying in one vertical plane, the horizontal rolls being both alike and symmetrical, and the two vertical rolls similarly both alike and symmetrical (Fig. 10). It does not transpire how the formation of fins is avoided, but some supplemental means would be required, as gaps must necessarily occur between the rolls until they have been adjusted to their ultimate positions prior to the final pass, and fins would inevitably be formed on the edges of the flanges of the bar.

E. M. Butz, patent No. 499,651 (1893), describes a series of nonreversing universal mills, each having a pair of horizontal rolls and a pair of vertical rolls,

with their axes all lying in one vertical plane, the two horizontal rolls being alike and symmetrical, and the two vertical rolls being similarly alike and symmetrical (Fig. 11). The rolls are nonadjustable, having a fixed pass, and the bloom is reduced by passing it once only through each set of rolls, the pass of which is narrower in each set than in the preceding set, until in the last set of rolls the pass has the exact contour of the finished beam. Thus, as many mills must be used as number of passes necessary to reduce a bloom into a finished beam, each mill having its rolls shaped according to the reduction required to be given in each pass.

The rolls being fixed and the adjacent surfaces of the horizontal and vertical rolls being suitably shaped so that they are almost in contact with each other, it is probable that no very pronounced fins will be formed on the bar; but as it is not practicable entirely to close the gaps between the rolls, particularly as during rolling considerable deflection takes place and the pass somewhat opens out, it is certain that at least beads, if not fins, would be formed on the corners of the bar flanges. Consequently, to obviate this, Butz proposes to use supplementary means to roll down the corners of the beam flanges adjacent to the gaps between the rolls. These consist of two small idle rollers, one on each side of the beam as it emerges from the main rolls, as shown dotted on the sketch (Fig. 11), and so adjusted that at each successive rolling operation the pass between the main rolls would be only just filled up at those corners, and there would not be sufficient metal to flow into the gaps and form fins. It appears, however, as if this arrangement would necessitate some means of supporting the flanges, as otherwise they would become bent, and consequently the corners would not be rolled down in the manner intended.

The Grey Patent

Henry Grey, patent No. 587,958 (1897), describes a reversing universal mill having a pair of horizontal rolls and a pair of vertical rolls, with their axes all lying in one vertical plane, the two horizontal rolls being alike and symmetrical, and the two vertical rolls being similarly alike and symmetrical (Fig. 12). This mill works in combination with a second mill having a pair of symmetrical horizontal rolls only. The first mill has rolls for shaping the web and sides of the flanges of the beam, but not the edges of the flanges, and the second mill has rolls for shaping the edges of the flanges only.

The two mills are situated as close together as possible and have their driving and adjusting mechanisms connected together so that the bar passes through both sets of rolls as nearly simultaneously as possible with such an arrangement. Thus on one portion of the bar the flanges are being shaped on their edges, while a short distance farther on the sides of the flanges and the web are being formed, and the resulting beam is free from fins and presents a good appearance.

The Prevention of Fins and Other Difficulties

The foregoing systems of rolling beams devised by different inventors have been chosen as typical and to illustrate the means which experience teaches or ingenuity suggests might be adopted to overcome the chief difficulties which were mentioned at the beginning of this paper. Each points out the direction in which the endeavors of the inventor were brought to bear and each possesses features which, although involving complications as compared with the ideally simple plant represented by a pair of horizontal grooved rolls, yet are to be considered, for the time being at least, as having their justification in the better quality of the product obtainable thereby, or in the ease, cheapness or speed of production.

The author does not assume, of course, that the systems he has chosen for his illustrations were all intended by their several inventors as means for manufacturing H or wide flanged beams as differentiated from I-beams or beams of the ordinary standard sections; but they illustrate some of the features which the practical designer of to-day is likely to take into consideration in evolving a mill suitable for the production of H or wide flanged beams.

For the production of beams with abnormally wide flanges it may be assumed that a universal mill having four rolls, two horizontal and two vertical, all lying in one vertical plane, is the simplest type of machine that can satisfactorily answer the purpose. A single reversing universal mill, requiring a tilting gear on each side, with which the bar is turned half round after each pass, is described by H. Sack and also by J. S. Seaman. These mills look simple, but evidently have drawbacks, due partly to the introduction of the tilting gears, which are complications in themselves and are apt to require considerable time for their manipulation, particularly when the beam is long and bent, and partly also, perhaps, to the unsymmetrical section developed at each pass which, in the rolls described by H. Sack, would have the tendency to produce a bar bent sideways, and in those described by J. S. Seaman a bar bent vertically, so that very powerful guides would be required in the case of the heavier beams to keep the bar sufficiently straight as it emerges from the rolls to enable the tilting gears to operate satisfactorily. Briefly, in other words, the unsymmetrical rolls probably render other complications necessary in order to counteract their bending effect.

A three-high universal mill housed within one pair of stands only and requiring a lifting table on each side is described by J. S. Seaman (Fig. 6), and this would doubtless be a simple system to adopt if it were practicable to design the details of the roll satisfactorily and simply as regards the accommodation and adjustment of the vertical rolls in particular. Hitherto the author has not discovered a design of such an arrangement which would be considered satisfactory by himself or by the practical man.

Two mills arranged side by side and having rolls such as those of Hugo Sack or J. S. Seaman could be adopted, and tilting avoided, by making the horizontal rolls and the vertical rolls symmetrical in each case, but so formed that in one mill the edges of the flanges would be formed by the horizontal rolls only and in the other mill by the vertical rolls only (Fig. 13). Then after each pass the bar could be shifted from the one mill to the other, being rolled alternately in each mill until completely reduced. By this means the formation of fins would be avoided, but the plant would be considerably complicated, and as the centers of the passes in the rolls of the two mills could not conveniently be arranged very close together the shifting gears would require to be particularly powerful and quick acting in order not to lose much time over this operation.

A plurality of mills having universal rolls, or horizontal rolls only, each mill intended for developing a certain portion of the section, is described by Kennedy and Aiken, and also by Grey; but whereas the former leave certain portions of the section to take care of themselves in the initial passes and to be worked upon in the final stages only, Grey works upon the whole section at every pass, and his system appears to possess advantages and to combine practicability and simplicity to a greater extent than the other systems hitherto described.

Finally, a series of universal mills, each working upon the whole section of the bar, but each adapted for one pass only, is described by E. M. Butz. This system would entail, perhaps, the maximum outlay on plant and machinery, and would possibly be adapted for the maximum production per unit of time. For rolling rails, of which thousands of tons of one section can be disposed of on a single contract, a plant of this description might possibly be a good investment, but

for the manufacture of beams it seems more than doubtful whether it would be profitable to roll a sufficient quantity of each section to justify the expense of the plant and the time and trouble involved in changing so many sets of rolls for each section of beam.

Methods of Driving Vertical Rolls

Having dealt at some length with the various means adopted to overcome or prevent the formation of fins, which has been shown to be a matter of great importance, calculated to influence enormously the design of the rolls, of the mill containing such rolls, and even

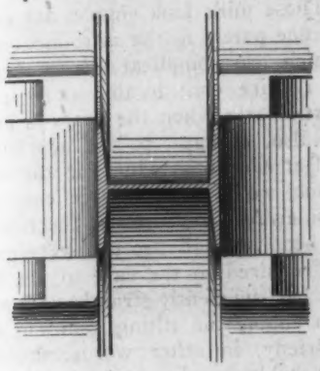


Fig. 10.—York Mill.

of the disposition of the whole plant, some mention should be made of the other features of the designs illustrated, for which they have also been specially selected.

J. S. Seaman, Julian Kennedy and Henry Aiken, E. M. Butz and Henry Grey have all endeavored to devise means for driving all the rolls of their universal mills, whereas Hugo Sack and L. D. York made no attempt to drive the vertical rolls, but content themselves with driving both the horizontal rolls and letting the vertical rolls rotate by contact with the moving bar as it is drawn through the pass by the driven horizontal rolls.

J. S. Seaman shows conical surfaces on the horizontal rolls engaging conical surfaces on the vertical rolls, contact being maintained between the two rolling surfaces by the pressure of the bar as it is squeezed between the rolls. This design has such grave defects that it cannot be regarded as mechanically sound enough for practical purposes; for, to be effective and avoid excessive wear and tear, the sides of the conical surfaces should be at such angles that, if prolonged, the apices of the cones represented by the prolonged sides would meet at the centers of the respective rolls, thus maintaining equal peripheral speed throughout the adjoining surfaces, in the same way as bevel gearing is designed. This is so obvious that it needs no further illustration; but if the vertical rolls were so designed their conical surfaces would make such acute angles that they would have a powerful wedge action, and, on application of the rolling pressure, component forces of excessive magnitude would occur, resulting in excessive deflection of the rolls, wear and tear, and probably a wrecked mill.

Grey shows a device whereby conical or cylindrical collars on the top horizontal roll engage, by frictional contact, with conical or flat surfaces on the vertical rolls, and contact is maintained between the two by means of hydraulic pressure (Fig. 14). Like Seaman's design, this has also the defect that the peripheral speeds of the frictional surfaces are not constant throughout, and this defect cannot be remedied without introducing others as great or greater. Moreover, the driving force imparted to the vertical rolls by such means must be so limited as to render it inoperative for practical purposes. Altogether the device looks too unsound mechanically for practical purposes.

Kennedy and Aiken in their second mill show in contact conical surfaces, which are designed on proper lines, but between which effective contact could hardly be maintained during rolling, for the pressure would cause deflection and spreading of the rolls; nor could sufficient pressure be applied in any case to render such contact very effective. They suggest, however, that the friction cones could be replaced by toothed gearing, and similar toothed gearing is also suggested by Butz; but in both cases, although a positive drive would be obtained, it would not be possible to adjust the rolls even slightly without interfering with the proper engagement of the gearing.

The neatest device for driving all four rolls, while still maintaining adequate adjustment between them, is that shown in the first mill by Kennedy and Aiken. In this case the rolling pressure on the horizontal rolls is directly utilized to furnish pressure to give the requisite frictional contact between the driven and the idle horizontal rolls, while the vertical rolls are positively driven by gearing. Such a device would doubtless give satisfactory practical results, although it is doubtful whether the results obtained thereby would compensate for the complications it involves in the mechanism of the mill.

In the manufacture of H-beams a bloom is usually first reduced in a blooming mill to a rough I-shape, and thereafter operated upon and finished in the universal mill, and the idea that it is necessary to drive the vertical rolls in the universal mill as well as the horizontal rolls appears to be more theoretical than real.

The advantage of driving the vertical rolls instead of letting them run idle is most apparent before the bar has been gripped by the rolls as it enters the pass, and it is then conceivable that it would be easier to grip the bar if the vertical rolls were driven. Once the bar has been gripped by the driven horizontal rolls there is, however, no apparent drag upon it, due to any lagging of the vertical rolls. In fact, if a tendency

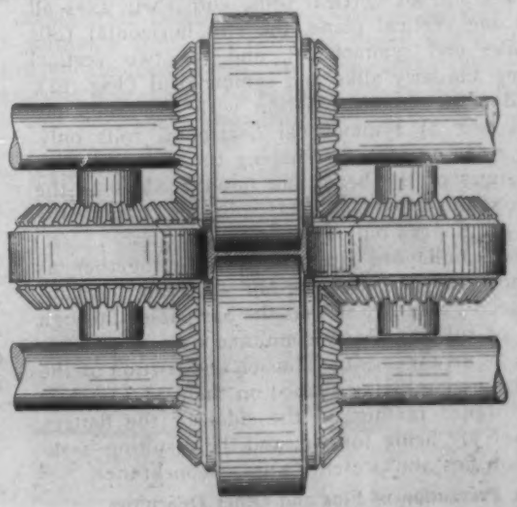


Fig. 11.—Butz Mill.

for the vertical rolls to lag behind were present no frictional device on the lines of any of those disclosed would be sufficiently powerful appreciably to diminish such a dragging effect.

The best conceivable frictional device for driving the idle vertical rolls is afforded as soon as the bar has been gripped by the rolling surfaces of the horizontal rolls and is in contact with those of the vertical rolls, and, as before stated, an independent frictional drive could only serve a useful purpose providing it were sufficiently powerful, by helping to introduce the bar within the pass before it had been gripped by the horizontal rolls, but not otherwise.

Action of Horizontal Rolls on Flanges

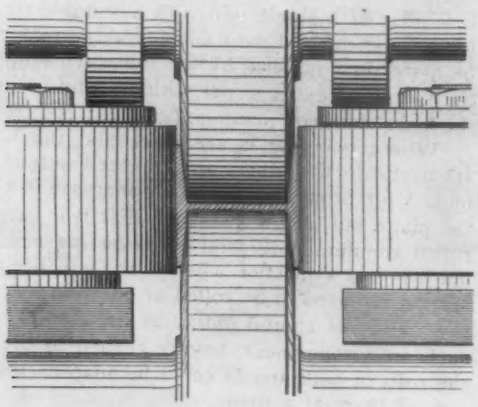
In this connection the fact must not be overlooked that the horizontal rolls do not operate upon the web

of the beam alone, but operate equally upon the sides and, perhaps, also upon the edges of the flanges. Thus it is not a case of the flanges being pulled through the rolls by a force imparted to the web, but, as a matter of fact, the flanges are directly gripped by the driven horizontal rolls, and the vertical rolls are only a form of surface for resisting the side pressure and participate in squeezing the bar, and have really no appreciable tendency to slip and lag behind. It is obvious, however, that the horizontal rolls will have a better grip upon the flanges the more the inside faces of these are inclined outwardly, and the greater the inclination the greater will be the rolling effect also. Consequently the author ventures to express the opinion that the method described by Sack, whereby the section is developed with the flanges outwardly bent from the horizontal center line, is not only peculiarly well adapted for rolling H-beams having very wide flanges, but the material in such beams should also be particularly well worked up and free from internal stresses.

The modern tendency is to reduce the inclination of the flanges of beams in order that the material may be better distributed by concentrating it as little as possible in the center of the section and distributing it more outwards, in order to obtain a higher moment of inertia, and thereby greater strength for a given weight. This applies particularly to H-beams intended to be used as columns, where the least moment of inertia must be used as a basis for calculating their resistance against buckling, and where the ideal section should have an equal moment of inertia in all directions.

Therefore, by so distributing the material in the flanges that a greater amount than formerly is concentrated on the edges of the flanges, and a proportionately lesser amount at the roots where they join the web, the moment of inertia is increased without increasing the weight of the beam.

Now, with the system described by Sack, the flanges can just as easily be made parallel throughout, or without any taper, as otherwise, thus obtaining the advantage of increased strength without adding to the weight of the beam. But in addition to this advantage such beams possess the further advantage that they can



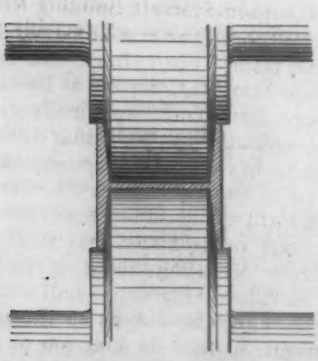


Fig. 12.—Grey Mill, 1907 Patent.

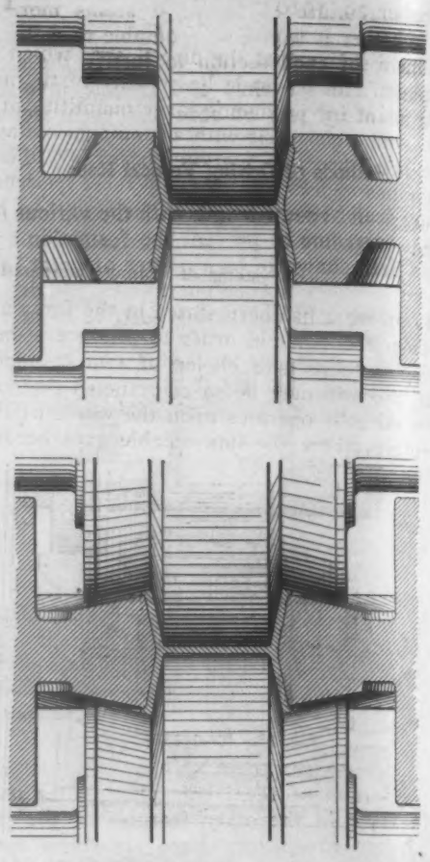


Fig. 13.—Modification of Sack and Seaman Mills.

be drilled and punched, rivet and bolt heads bedded, and connections with other members made much more easily and cheaply than the ordinary sections having flanges which taper however slightly. These advantages are, moreover, obtained without sacrificing in any way the quality of the materials, but rather the contrary is the case.

With all systems in which the flanges are developed straight—that is to say, with their outside surfaces at right angles to the plane of the web, or nearly so—a certain inclination of the inside surfaces is essential to the proper performance of the rolling or reducing operations, and the more this taper is reduced the greater will be the risk of damaging the material, by reason of the greater tendency of the sides of the horizontal rolls to scrape away instead of rolling or squeezing away the inside surfaces of the flanges; and not only this, but also the greater will be the friction of the horizontal rolls on the inside surfaces of the flanges and consequently the greater the wear and tear on the rolls.

It is obvious that the application of the system described by Sack will result in a better beam, a stronger beam, a beam with a better quality of material in it, and diminished wear and tear of rolls, as compared with other systems which do not develop the flanges in an outwardly bent state.

The Sack Mill at Rombach

The author having been intimately associated with the late Hugo Sack, whom he assisted in the development of his ideas, has had the opportunity of making himself thoroughly conversant with the practical aspects of this particular process, and he feels convinced that no other system at present known is so well adapted to produce commercially H-beams of a good, sound quality, as that which Mr. Sack invented nearly 25 years ago, and upon which he brought his masterly mind to bear with such persistent energy and enthusiasm.

The extensive trials carried on at the Rombach Iron Works have proved the soundness of the system, and

they have shown that the direction in which improvements can still be made lies chiefly in the adaptation of the plant for producing large quantities of material on a commercial basis with a minimum outlay in capital expenditure and working cost. To this end the author has endeavored to apply the experience he has acquired, and ventures to give the results of his efforts in the succeeding.

The Two Systems of Rolling Compared

From what has been stated in the foregoing it will be understood that in order to produce H-beams free from fins there is a choice of two distinct systems. First, the mill may be so constructed that one set of universal rolls operates upon the whole of the section excepting where the unavoidable gaps occur between

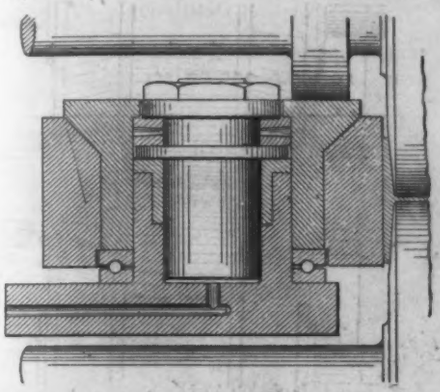


Fig. 14.—Grey's Device for Frictional Contact.

the rolls, the positions of which gaps must be changed frequently, or at every pass, this being attainable with one set of universal rolls forming an unsymmetrical pass as regards the location of the gaps, or with two sets of universal rolls, each forming a symmetrical pass, but each different as regards the location of the gaps—that is to say, using a single reversing universal mill and tilting the bar half round between the passes, or using two universal mills (which may be reversing or nonreversing), and shifting the bar from one to the other between the passes. Secondly, the mill may be so constructed that one set of universal rolls operates

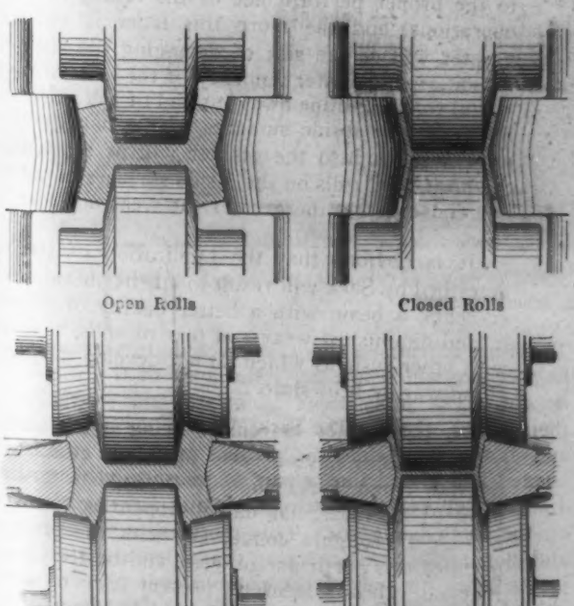


Fig. 15.—Suggested Shapes of Rolls in Tandem Universal Mills.

upon the greater portion of the section and is adapted to reduce and elongate the bar as a whole, while a second set of rolls operates only upon those portions of the bar which are not operated upon in the first set and are adapted to reduce the bar locally, but not to elongate it or reduce it as a whole—that is to say, using a primary reversing universal mill in tandem with a secondary reversing mill, the two situated so close together that the bar is operated by both at the same time, although on portions a short distance apart.

It is with the second of these systems that the author wishes to deal, because the first is already sufficiently well known, and because he believes that the second possesses greater possibilities of development in the direction of economy.

Grey uses a primary reversing universal mill with four rolls operating upon the web and the sides of the flanges of the bar, reducing and elongating the bar as a whole, but leaving the edges of the flanges untouched; and in tendem therewith a second reversing mill, having two rolls which guide the bar and operate upon the edges of the flanges only. Thus, in the tandem mill, at every pass the bar is operated upon all over and the formation of fins is prevented.

Retaining the system of Sack, in which the beam is developed with outwardly bent flanges, the author suggests the employment of a primary reversing universal mill having its four rolls shaped to operate upon the web and sides and edges of the flanges, with the gaps between them located somewhat short of the extreme edges of the flanges, and sufficiently wide to prevent the extruded metal from cooling too quickly; and in tandem therewith, a secondary reversing universal mill with rolls shaped to guide the bar and roll down only the surplus metal extruded between the gaps of the primary rolls (Fig. 15).

Any irregularities which might still be left at the edges of the flanges after the last pass in this mill could then be eliminated altogether by properly shaping the rolls, so that the final pass required to straighten out the flanges in the separate set of rolls would roll down or fill up any irregularities, as the case might be, and give the section a final finish all over. The tandem system of rolling has the advantage that the beam is reduced all over, and extrusions of metal beyond the limits of the desired contour rolled down all in one pass, so that the mill may work uninterruptedly backwards and forwards, and no time be lost in tilting or shifting from one stand to another. The cost of the equipment should be very slightly, if anything, more than that of a single mill with a suitable tilting gear; but even if the cost were considerably greater, it would be more than justified by the increased output and by the saving of extra wages which would be incurred in the more elaborate manipulation.

Where two stands are used, and the bar shifted from one to the other, an increased output might be looked for proportionate to the increase in the cost of the plant and wages, provided that two bars could be rolled simultaneously and nonreversing engines used; but it is just a question whether the quantity of a given section required to be rolled at one time would justify the additional capital outlay in the plant required for such an arrangement, having regard to the fact that the rolls in both stands could be adapted for only one size of beam at a time.

A Thompson-Starrett Building Record.—In perhaps the quickest time ever made on a hotel structure, the 17-story steel frame Rector Hotel, now being erected by the Thompson-Starrett Company at Forty-fourth street and Broadway, New York, was finally closed in last week. It is the opinion of experts that nothing in the history of building has ever been accomplished quite like this before. For one whole week the exterior or stone work went forward at the rate of a story a day. The Thompson-Starrett organization has now been engaged on the Rector operation about seven months, but this period includes five and one-half months for the work of demolishing the old buildings and excavating for foundations, so that the erection of the superstructure from cellar to roof has been accomplished in eight weeks. The progress to date augurs well for the completion of the building next December.

The Robey-Smith Bevel Gear Planer

Details of an Interesting English Machine

BY JOHN M. LLOYD.

Gear cutting machines form a very interesting class of machine tools, and one that is made more so by the number and diversity of ingenious movements used. Milling machines using plain formed cutters can produce perfect spur gears of a given pitch and number of teeth, but for other numbers of teeth only approximate theoretical perfection. The same applies for bevel gears produced on planers using formers. In the Robey-Smith bevel gear planer, built by Smith & Coventry, Ltd., Manchester, England, and marketed in this country by Schuchardt & Schütte, West Street Building, New York City, the proper tooth form is generated in the cutting of the gear and no use is made of formed cutters or formed guides. The teeth of bevel gears are not of uniform thickness and depth, which is the main difficulty. By the hobbing method worm wheels and now spur gears also are produced with teeth of true involute form, but the principle cannot be applied in the cutting of bevel gears. In this machine the cutting tools are reciprocated like those of a shaper, and the correct relation of the tools and the work is maintained so that the proper form of tooth curve results.

Fig. 1 is a general view of the machine from the operating side, while Fig. 2 is a view on the opposite side of the machine showing a blank in position for cutting, some of the work turned out and the different gauges used. Practically all the essential parts are shown in both views from two different angles and for convenience in locating them the same reference letters have been used throughout. Fig. 3 shows a special piece of work turned out by one of these machines at the shops of the Brightwood Motor Mfg. Company, Springfield, Mass.

General Description

The planer operates on the shaping machine principle and uses two tools, one on each side of the tooth.

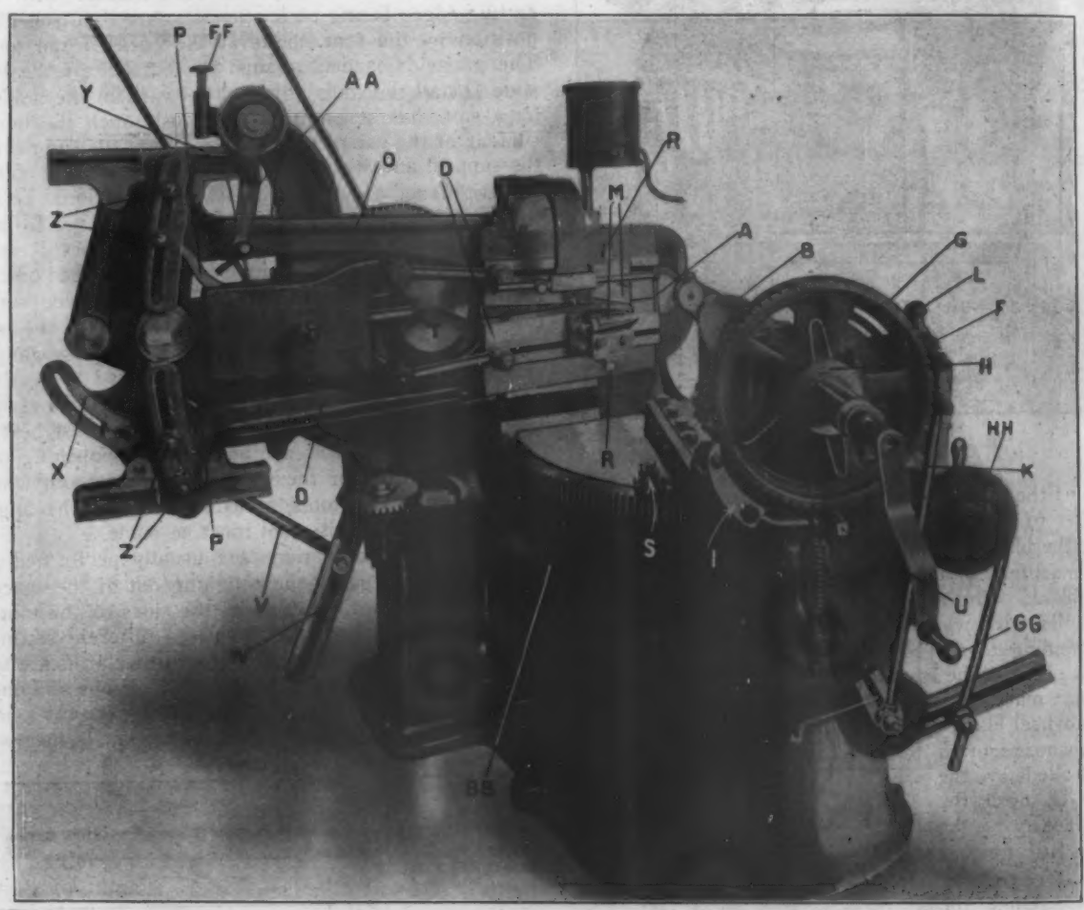


Fig. 1.—General View of the No. 2 Robey-Smith Bevel Gear Planer, Built by Smith & Coventry, Manchester, England; Schuchardt & Schütte, New York City, American Agents.

These are carried on slides on pivoted arms converging to a center which intersects the apex of the wheel to be cut. The tools move backward and forward on their slides, the former movement being accelerated, and at the same time the pivoted arms are gradually opened and closed like a pair of scissors, varying the distance between the cutting tools and forming a curve on the tooth being cut. This mechanism for opening and closing the arms carrying the slides and the tools is the basis for one of the patents covering this machine. It will be seen from Fig. 1 that the saddle carrying the blank to be cut has a rotary motion, the center being directly under the apex of the blank to be cut. This rotary motion feeds the blank to the tools, and is stopped automatically when the tooth has been cut to the proper depth. This saddle is connected with the pivoted arms carrying the slides and cutting tools by a circular bar, B B, having teeth cut in a portion of

its circumference. These engage with a quadrant, which through a pair of bevel gears and a slotted lever actuate a connecting rod to control the swinging parallel motion which in its turn operates the pivoted arms. The blank is rotated the pitch distance at each stroke of the tools, which is said to prevent the local heating common in machines which complete one space at a time and eliminates the errors produced by the wear of the cutting tools.

Setting the Work

The first step in cutting the gear is the setting of the wheel blank in its proper position relative to the

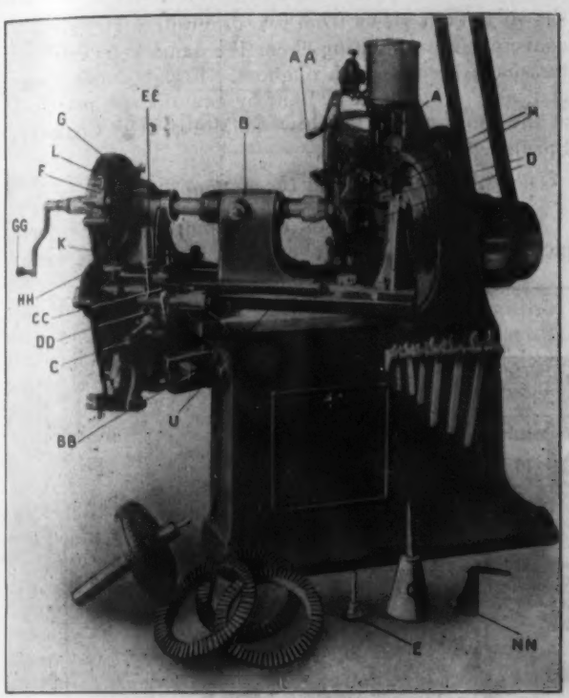


Fig. 2.—Side View of the Planer.

center of the machine. For this two gauges are used. The first of these, the distance gauge A, is used for setting the blank at the right distance from the center of the machine, which also corresponds with the apex of the blank. The rod in this gauge is adjusted until the vernier with which it is provided reads a number corresponding to the center distance obtained from a formula given in the book of instructions which accompanies the machine. The rod is then locked in position and the wheel blank set in position by withdrawing the slide B, whose motion is controlled by the crank GG, until the back face of the wheel just touches the pointer of the gauge. Once the slide is properly set it should not be disturbed again, and the gauge is then swung out of the way to the top of the machine. The top of the machine table has a scale marked in degrees which is used for reading the pitch, face and base angles of the wheel, a vernier being provided to read these quantities to five minutes. The table slide is moved by the handle C until the vernier reads the face angle of the blank. If the blank has been truly turned and accurately set to the distance gauge, the face of the wheel should be perfectly parallel with the tool slide D, and this is tested by the gauge E, which should just fill the space between the tool slide and the face of the wheel at every point.

The blank is divided with reference to the number of teeth to be cut by a pawl, F, and the dividing plate G. The plate is placed in position on the spindle sleeve and secured by screwing up the split nut H. This nut locks together the dividing plate, the split sleeve and the mandrel, and if it is not securely locked the blank will move while being cut. To set the dividing apparatus the spindle is revolved until the plunger I falls into a notch in the dividing plate. The slot J is placed in a vertical position and the connecting rod K set to take up the required number of teeth, which to secure the best results should not exceed three. The pawl F is then adjusted by the screw L until it almost touches the face of a tooth in the dividing plate, which concludes the setting.

Setting the Tools

Both round nosed and pointed tools are used, the former for roughing out the spaces and for finishing where the ratio of the wheels does not exceed 3 to 1, and the latter for finishing when this ratio is exceeded. As the pointed tools are more generally used, the method of setting them will be taken up first and the deviations necessary for the round nosed tools given later.

The tools M are placed in the holders with the cutting edges facing each other and are lightly held in position by the taper bolts at the back of the tools. The gauge N is held against the surface of the tool slide D and the tools adjusted forward in the holders by a small set screw until they just touch the under surface of the gauge, which is ground at the end nearer the support and stepped at the other. The taper bolt is then tightened and the tools locked in position. To set the tools in the correct position vertically, the former arms O must be adjusted until the pointers P read zero on the scales. The gauge Q is then placed on the table of the machine and the tool holder moved vertically by the screw R until the cutting edge of the tool just touches the upper and lower surfaces of the gauge, respectively. In setting the round nosed tools that portion of the under surface of the gauge N bearing the size of the radius of the round nose must be the one to which the tools are adjusted. In opening out the former arms for the thickness of the tooth when using round nosed tools, a deduction from the angle given for a sharp nose tool must be made.

Two distinct operations are usually performed in the cutting of a gear—the roughing out of the spaces and the forming or finishing of the sides of the tooth. For each operation the planer has a different setting. When roughing out the spaces, the former arms are set so that the pointers attached to them read one and one-third times the angle to which the arms are set when finishing the teeth. The knock-off motion is then set

Fig. 3.—An Automobile Cam Shaft with Bevel Gear Made on the Planer.

when using round nosed tools by turning the saddle around until the tool touches the face of the blank. It will then be found that the vernier reading is not the same as that given by the formula and whatever the difference is the same allowance must be made on the base angle. When pointed tools are used the saddle is turned around until the vernier reading is the same as the base angle. When in this position the stop bracket S is moved to touch the end of the knock-off rod and bolted securely. The stroke of the tool should be 1¼ in. more than the face of the gear wheel teeth and in the case of a large, heavy gear may be made still longer. The length of stroke is regulated by the position of the connecting rod bolt in the slot of the disk T, which is marked with a scale, by which the stroke can be immediately set to any desired length.

The overrun of the tools after cutting through the blank should not exceed ¼ in.

When setting the machine for forming or finishing the teeth the spindle slide U is turned around until the vernier reads the pitch angle. The connecting rod V is set to the pitch angle on the scales W and X and the scale Y is moved to correspond. When this has been done the bolts Z are released and the former arms O adjusted until the pointers P read the correct angle of the former arms, as determined from the formula. For adjusting the former arms the lever AA, attached to the pulley over which the band for balancing the arms passes, is used. When this adjustment has been made the bolts Z are locked. The accuracy of the settings is first tested by depressing the plunger FF, and if the graduation on the center of the lower edge of its face coincides with the pitch angle on the scale Y the proper setting has been made. The other test is to turn the spindle slide U outward and bring it back to the pitch angle when the pointers P should give the same scale readings as at first. The settings for the stroke and the knock off motion should remain undisturbed from the roughing operation. Before starting to cut, the spindle slide U should be wound back to allow the vernier on the table to read the face angle plus half a degree. More or less curvature can be secured by changing the position of the connecting rod V on the scale W.

Operation of the Machine

The machine is driven from a three-step cone pulley and a small pinion mounted on this shaft meshes with the gear showing above the top of the former arm in Fig. 1. At the other end of the shaft, to which the large gear is fastened, is the disk T. This disk is connected with a slide and from this slide two connecting rods convey a shaping motion to the two slides carrying the tools, which motion is accelerated on the return stroke. The motion for the feed mechanism and the dividing plate is taken from the shaft of this large gear by a chain and sprocket to the disk containing the slot J, the connection being through a universal joint, a friction disk and a bevel gear. Motion for the feed is transmitted from this disk to the ratchet wheel HH. On the opposite end of the shaft is mounted the worm CC, which meshes with the wheel DD. The feed may be operated by hand through the lever C or the clutch FF may be thrown in to secure power feed.

The saddle is mounted on an extension of the body of the machine and to its upper surface is bolted the headstock carrying the wheel blank to be cut and also the dividing mechanism. The spindle in the headstock is very large in diameter and is made in two parts, the end containing the index wheel remaining stationary, while the front part is fed back and forth to locate the blank in the proper position for cutting. A hole extends through its entire length to receive mandrels or the specially long bosses found in motor car work. For supporting the latter an outer support is provided for the ends which renders the blank very steady under all cuts.

Twenty-one dividing plates are supplied which are made with two separate sets of notches. The set in which the pawl F works is used for dividing the blank, while the other set in which the pawl I works serves to push the plate around and is more powerful, as its action is controlled by a spring, which also prevents back lash. Three gauges for setting the tools, one for setting the blanks in position, eight pairs of high speed cutting tools, a countershaft with tight and loose pulleys, the necessary screw keys and an instruction book for operating the machine and turning the blanks accompany the machine.

Four sizes of planer are built, of which the following table gives the principal dimensions and specifications:

Machine number	1	2	3	4
Pitch line diameter of miter wheels cut, inches	0¾	16	24	36
Pitch line of bevel wheels cut, inches	11½	17½	26	38
Diameter of hole in spindle, inches	⅝	1¾	2	2¼
Maximum pitch cut, inches	1½	2	2½	3
Maximum width of tooth, inches	3¼	4	6¼	7½
Floor space, feet	5¼ x 4¾	7½ x 6	8 x 7½	11½ x 8½
Net weight, pounds	3,450	6,390	8,850	15,900

The No. 2 machine at the plant of the Brightwood Motor Mfg. Company cut the gear shown on the automobile cam shaft in Fig. 3 in one hour. The gears shown on the floor in Fig. 2 were cut in 1 hour and 15 min. These had 60 teeth 1⅜ in. wide and the pitch was 5. The material used was 3½ per cent. nickel-steel.

Iron and Steel Analysis

Method for the Estimation of Total Carbon in Iron Alloys

The following method is described by Professor Wüst in a recent number of *Metallurgie:*

From 0.5 to 1.0 g. of the alloy, in the state of fine drillings or powder, is mixed with powdered antimony, three times the weight, and powdered zinc, an equal weight to the drillings. These two metals should be as pure as possible, and are powdered in a steel mortar. The method followed is similar to that in the direct combustion process for steel, the temperature necessary being from 800 to 900 degrees C. On fusion, the solubility of the carbon is lowered, and it separates from the metal in an easily oxidizable form. Below are given some results, showing how the new method compares with the Sarnstrom:

No.	Material.	Method.	1.	2.	3.
1.	Gray pig iron	Sarnstrom	2.403	2.400	....
		New	2.408	2.400	....
2.	Salamander	Sarnstrom	8.018	7.90	....
		New	8.015	8.013	....
3.	Nickel steel, 24.8 per cent.	Sarnstrom	0.385	0.355	....
		New	0.393	0.393	0.390
4.	Tungsten steel, 1.70 per cent. W	Sarnstrom	0.543	0.605	0.582
		New	0.590	0.597	0.590
5.	Ferrochrome, 44.96 per cent.	New	5.71	5.69	....
6.	Ferrotungsten, 50-55 per ct.	New	0.052	0.060	0.060
7.	Silicon manganese alloy, 14 per ct. Mn., 7 per ct. Si.	New	3.24	3.25	3.278
8.	Ferrosilicon, 27.28 per cent.	New	0.609	0.603	0.605
9.	Ferrosilicon, 47.88 per cent.	New	0.270	0.262	0.278

The Sarnstrom method is one of solution in chromic and sulphuric acids. There may be seen excellent comparison with the first two samples. Samples 3 and 4 were not well adapted to the Sarnstrom method. The new method shows results that check excellently with each other.

The other samples could not be done by the Sarnstrom method, and it is to such materials that the new method is specially applicable. G. B. W.

Sons of Vulcan Puddling Scale Settled.—At a meeting held in Pittsburgh, September 25, a settlement was reached between the Sons of Vulcan and certain bar iron mills. The organization had demanded 50 cents more a ton for boiling than the rates called for in the Amalgamated scale. The mills have compromised by granting an increase of 25 cents a ton. The manufacturers represented at the meeting, and who have signed the Sons of Vulcan scale are as follows: Youngstown Sheet & Tube Company, A. M. Byers & Co., Brown & Co., Pittsburgh Forge & Iron Company, Zug Iron & Steel Company, Lockhart Iron & Steel Company, Kittanning Iron & Steel Company, Colonial Steel Company, Crescent plant of the Crucible Steel Company and Wheeling Iron & Steel Company. The Lockhart Iron & Steel Company and the Pittsburgh Forge & Iron Company signed both scales. In both these mills the Amalgamated men have been working for the past month or so taking the places of the Sons of Vulcan.

The Mechanigraph

A machine which is of interest to those who pay for making tracings for any form of light printing has been placed on the market by Topping Brothers, 122 Chambers street, New York City, and is illustrated herewith. This machine renders an opaque pencil or pen drawing transparent and printable practically instantaneously and at a cost of approximately one-third of a cent per sq. yd. It is also of interest to makers and users of blue prints because it effects a saving in time and also in money.

The Mechanigraph, as it is called, consists of a series of electrically warmed rolls, a bath also electrically warmed, a series of traveling tapes, and a pair of drying rolls. Fig. 1 is a front view showing the drawing passing through to the drying rolls and supported by the traveling tapes. The electrically warmed rolls and the bath are in the front of the machine as shown at the right end where the covering is broken away. Fig. 2 is a rear view showing the treated drawing as it issues from the drying rolls. The machine is built of heavy wrought and cast steel with turned rolls and when set up ready to work occupies a floor space less than 4 ft. square or about half the space occupied by a single draftsman.

Any piece of white paper no matter how heavy or thick is rendered transparent enough to blue print through quickly, thus eliminating tracing on cloth or paper and rendering it possible to make details in pencil and after passing the sheet through the Mechanigraph, to blue print directly from it. Among the advantages of such a machine are the elimination of the time spent in tracing details which enables estimating and real construction to be started as soon as the original drawings are made. Errors that are bound to creep into any tracing, the time occupied in making the tracings themselves and in checking them all cost money and take time and are done away with.

Fig. 1.—The Mechanigraph for Making Opaque Drawings Transparent, Made by Topping Brothers, New York City.

The drawing to be treated is passed through the first pair of rolls which carry it through the bath containing the transparantor liquid and from there it is carried along a series of moving tapes through the drying rollers. The machine is operated by the crank shown at the right in Fig. 1, and the amount of current employed for warming the rolls and the bath is regulated through the rheostat underneath. The time occupied in treating a drawing from the instant it is placed in the machine until it goes out finished and thoroughly dry is not much more than it would take to pass it through an ordinary clothes wringer. The pressure on the drying rolls, which are driven by a chain running over sprockets from the crank, is maintained by adjustable spherical iron weights. Practically all the attention required is said to be oiling the bearings occasionally and washing out the bath tray and refilling it with the liquid. This is inexpensive, does not evaporate, and is said to be absolutely non-inflammable.

Ink drawings can be treated as easily and as satisfactorily as pencil ones and it can also be used for

Fig. 2.—Rear View of the Mechanigraph, Showing a Treated Drawing Issuing from the Drying Rolls.

restoring old tracings that have become water spotted and crinkled until they will scarcely print at all, so that they are as bright and crisp as when they were first made. Van Dyck prints may be treated and made so transparent as to form negatives for producing positive blue prints and pencil drawings after having been treated may be erased and changed as readily as originally. When passed through the machine again the corrected drawing will be just as good as the original.

The Amsler Gas Producer for Glass Houses.—The Fostoria Glass Company, Moundsville, W. Va., has been operating two Amsler gas producers in its glass house. The installation has been found so satisfactory from an economical standpoint that the company has ordered five additional producers 11 ft. in diameter. It formerly used natural gas. In placing the order with Walter O. Amsler, Wabash Building, Pittsburgh, the company made this statement: "We are using gas from these producers in an entirely new manner, having connected them up with our deep eye furnace without leaving the furnace out. The results have been fully up to our expectations. The furnace is running on its natural draft. We use it in melting Hancock sand in large pots, 45 x 60 x 54 in. Everybody knows that Hancock sand is hard to melt; this furnace is melting the pot of glass in from 22 to 24 hours. Daily average for two months' run is 10 tons of coal. We believe the life of our furnace with producer gas, using it in the manner in which we are, will be as long or longer without repairs as with natural gas for fuel."

The Michigan Central Railroad tunnel under the Detroit River, between Windsor, Ontario, and Detroit, Mich., was opened to regular freight service September 17. Passenger service will shortly be inaugurated. The railroad company's car ferry, which was a picturesque marine feature of Detroit, will then be discontinued.

Segregation in Soft Steel Ingots

Its Effect on Rolled Material as Shown in Tensile and Shock Tests

In the issue of *Metallurgie* for June 22, 1910, is a paper by Professor Wüst and Herr Felser on "The Influence of Segregation on the Tenacity of Soft Steel," detailing the results of a valuable piece of research work. The aim was to find what influence the segregation in soft steel had on the mechanical properties of round bars rolled from the ingots. Six square ingots were taken as follows:

No.	Kind.	Top. Inches.	Bottom. Inches.	Length. Inches.	Hight. Pounds.
1.	Basic Bessemer	11.4	12.6	61	2,200
2.	Basic Bessemer	7.3	6.9	41.3	550
1.	Basic open hearth	11.4	12.8	61	2,200
2.	Basic open hearth	7.9	8.9	45.3	750

They were all bottom cast. The two small Bessemer ingots were made from a different heat from the large one, but all the open hearth ingots were from the same heat. One of the small Bessemer ingots and one small open hearth ingot were rolled into rounds; the others were examined for segregation. First, they were cut longitudinally and the surfaces planed and polished with fine emery paper. The photographs are reproduced in Figs. 1 to 4.

Fig. 1.—Large Basic Bessemer Ingot.

Fig. 2.—Large Open Hearth Ingot.

Two Kinds of Blowholes

In Fig. 1, the large basic Bessemer ingot, may be seen the pipe at the top and two kinds of blowholes. One kind starts from the pipe and keeps at an even distance from the edge; some may also be seen scattered in the interior. Between this series and the edge in the lower half of the ingot is seen the second series of blowholes. They extend horizontally, approaching very closely to the walls, and are dangerous on this account. At a high temperature oxidizing gases can penetrate the walls of the ingot and oxidize the inner surfaces of the blowholes; then tears and scales are formed in rolling. One theory for their formation is that they come from the rapid chilling of the steel in the lower part of the mold; the upper part being heated by radiation and the good conductivity of the iron mold does not cool the steel so fast. Both the open hearth ingots are similar in appearance to the one just described, but the small Bessemer ingot is quite different. It must be remembered it was made from a different heat. It gives the typical appearance of a rising steel, the upper half being full of scattered blowholes. In order better to observe the distribution of the blowholes, pieces were cut horizontally and photographs are shown in Figs. 5, 6, 7 and 8. The blowholes are arranged symmetrically, the long ones being parallel to the nearest edge. It is also clearly seen that they reach over half way up the ingot in the case of the open hearth, but not quite to the middle in the Bessemer.

In order to determine the segregation drillings were taken with a ¾-in. drill, the method of drilling being shown in Figs. 9 and 10 for the large and small ingots, respectively. The horizontal sections were also drilled, method being shown in Fig. 11. The ladle tests were as follows:

Fig. 3.—Small Basic Bessemer Ingot.

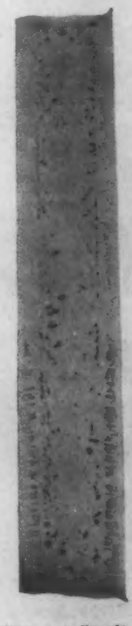


Fig. 4.—Small Open Hearth Ingot.

	C. Per ct.	Mn. Per ct.	S. Per ct.	P. Per ct.	Si. Per ct.
Basic Bessemer	0.07	0.53	0.061	0.05	....
Open hearth	0.085	0.48	0.04	0.05	0.016

The samples were analyzed for carbon, sulphur, phosphorus, manganese and copper, and the results will be taken up in that order.

Carbon Segregation

In the following tables are shown the results of the carbon estimations:

Table 1.—Carbon in Large Bessemer Ingot.

	1.	2.	3.	4.	5.	Average edge, 1 and 5.	Average center 2, 3 and 4.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
A1	0.080	0.135	0.130	0.138	0.085	0.083	0.134
A	0.085	0.082	0.096	0.073	0.073	0.079	0.084
B	0.076	0.087	0.080	0.070	0.070	0.073	0.079
C	0.076	0.076	0.085	0.078	0.068	0.072	0.080
D	0.055	0.082	0.073	0.080	0.060	0.058	0.078
E	0.055	0.070	0.062	0.083	0.060	0.058	0.072
F	0.062	0.060	0.078	0.082	0.056	0.059	0.073
G	0.078	0.065	0.073	0.066	0.082	0.080	0.068
H	0.060	0.080	0.060	0.078	0.085	0.073	0.073
I	0.078	0.073	0.062	0.074	0.063	0.071	0.070
K	0.083	0.074	0.068	0.075	0.068	0.076	0.072
L	0.066	0.067	0.092	0.070	0.076	0.071	0.076
M	0.070	0.063	0.070	0.060	0.067	0.069	0.064
N	0.064	0.066	0.070	0.070	0.073	0.069	0.069
O	0.067	0.092	0.065	0.075	0.090	0.079	0.074
P	0.072	0.083	0.065	0.075	0.076	0.074	0.074
Average						0.071	0.078

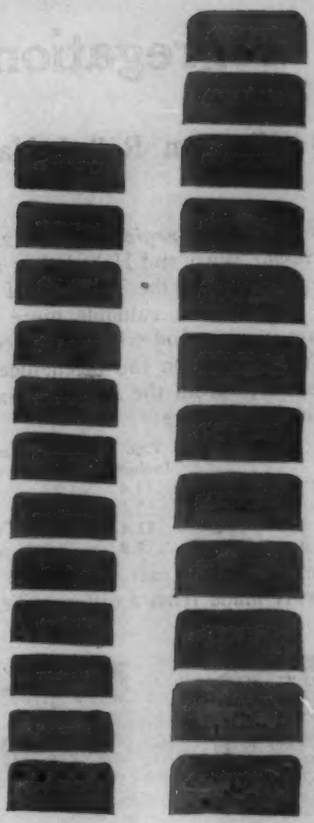


Fig. 7.—Small Basic Bessemer Ingot.

Fig. 8.—Small Open Hearth Ingot.

Fig. 5.—Large Basic Bessemer Ingot.

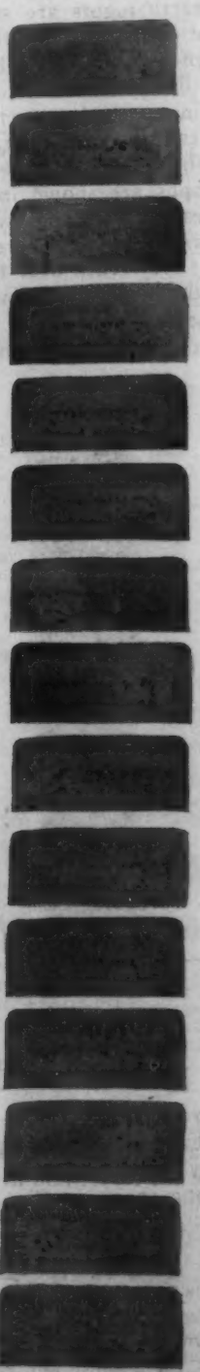


Fig. 6.—Large Open Hearth Ingot.

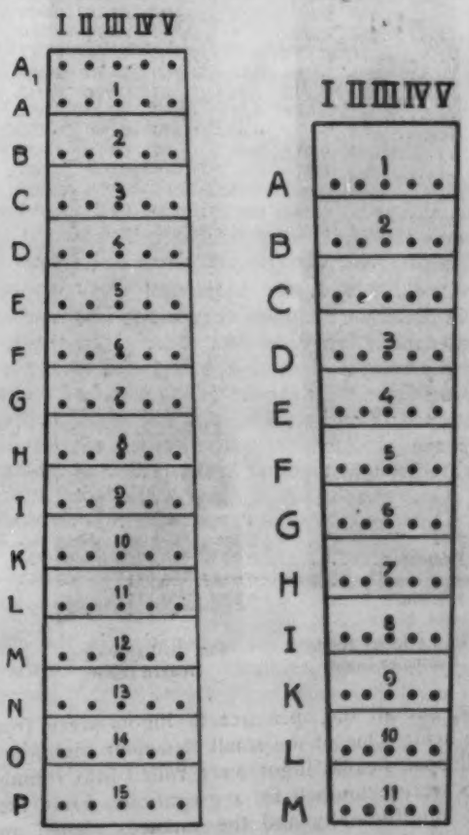


Fig. 9.—Large Ingots.

Fig. 10.—Small Ingots.

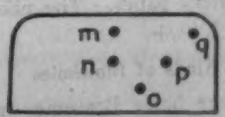


Fig. 11.—Horizontal Sections.

METHODS OF DRILLING.

Table 2.—Carbon in Large Open Hearth Ingot.

	1.	2.	3.	4.	5.	Average edge, 1 and 5.	Average center, 2, 3 and 4.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
A 1	0.075	0.10	0.095	0.103	0.078	0.077	0.099
A	0.093	0.113	0.113	0.100	0.083	0.088	0.109
B	0.082	0.086	0.081	0.086	0.088	0.085	0.084
C	0.067	0.116	0.086	0.083	0.080	0.074	0.095
D	0.096	0.082	0.10	0.100	0.078	0.087	0.094
E	0.085	0.084	0.061	0.084	0.078	0.082	0.076
F	0.084	0.086	0.078	0.081	0.082	0.083	0.082
G	0.080	0.078	0.080	0.083	0.080	0.080	0.080
H	0.075	0.070	0.076	0.080	0.075	0.075	0.075
I	0.073	0.076	0.077	0.078	0.080	0.077	0.077
K	0.078	0.071	0.073	0.083	0.077	0.078	0.076
L	0.076	0.075	0.084	0.078	0.080	0.078	0.079
M	0.082	0.060	0.080	0.075	0.085	0.084	0.072
N	0.075	0.107	0.085	0.070	0.083	0.079	0.087
O	0.075	0.080	0.100	0.076	0.072	0.074	0.085
P	0.072	0.093	0.092	0.076	0.070	0.071	0.087
Average						0.079	0.079

Table 3.—Carbon in Small Bessemer Ingot.

	1.	2.	3.	4.	5.	Average edge, 1 and 5.	Average center, 2, 3 and 4.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
A	0.130	0.117	0.120	0.120	0.135	0.133	0.119
B	0.128	0.125	0.160	0.126	0.147	0.138	0.137
C	0.104	0.160	0.167	0.124	0.110	0.107	0.150
D	0.104	0.118	0.117	0.126	0.093	0.099	0.120
E	0.100	0.117	0.176	0.116	0.092	0.096	0.156
F	0.093	0.092	0.127	0.112	0.092	0.093	0.110
G	0.098	0.087	0.081	0.090	0.100	0.099	0.086
H	0.098	0.087	0.096	0.102	0.102	0.100	0.095
I	0.097	0.095	0.094	0.084	0.120	0.109	0.091
K	0.088	0.084	0.092	0.095	0.091	0.090	0.090
L	0.091	0.080	0.082	0.112	0.160	0.126	0.091
M	0.160	0.080	0.086	0.104	0.340	0.250	0.090
Average						0.120	0.110

Table 4.—Carbon in Small Open Hearth Ingot.

	1.	2.	3.	4.	5.	Average edge, 1 and 5.	Average center, 2, 3 and 4.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
A	0.078	0.085	0.108	0.122	0.079	0.078	0.105
B	0.077	0.089	0.086	0.104	0.076	0.076	0.090
C	0.074	0.086	0.076	0.093	0.070	0.072	0.085
D	0.068	0.086	0.103	0.080	0.073	0.070	0.090
E	0.062	0.090	0.098	0.065	0.062	0.062	0.084
F	0.062	0.075	0.072	0.065	0.062	0.062	0.071
G	0.061	0.060	0.083	0.084	0.080	0.070	0.076
H	0.062	0.072	0.087	0.107	0.051	0.056	0.089
I	0.060	0.070	0.072	0.080	0.056	0.058	0.074
K	0.062	0.067	0.071	0.088	0.056	0.059	0.075
L	0.074	0.084	0.100	0.100	0.065	0.069	0.071
M	0.060	0.080	0.083	0.095	0.062	0.061	0.087
Average						0.066	0.083

The results with the horizontal sections are not given in detail here, though they are to be found in the original paper. They confirm those given above. By taking the results of rows 1 and 5, and *m* and *q* and averaging them, the analyses of the edges of the ingots are obtained; then by taking 2, 3 and 4 and *n*, *o* and *p* results are obtained from the center of the ingots. These are brought together in the following table:

Table 5.—Segregation of Carbon.

Ingot.	Composition.—Edge.	Composition.—Center.	Segregation.—Absolute.	Segregation.—Per ct.
Large Bessemer	0.070	0.0725	0.0025	3.5
Large open hearth	0.0757	0.081	0.0053	6.8
Small Bessemer	0.125	0.111	....	...
Small open hearth	0.070	0.085	0.015	21.4

From these figures the segregation in the case of the large ingots is practically negligible. In the case of the small Bessemer ingot, owing to the manner of solidifying, the center has actually less carbon than the edge. The small open hearth shows 21.4 per cent. The two open hearth ingots are very interesting, being both from the same heat.

Sulphur Segregation

The results of the sulphur determination are given in tables 6 to 10:

Table 6.—Sulphur in Large Bessemer Ingot.

	1.	2.	3.	4.	5.	Average edge, 1 and 5.	Average center, 2, 3 and 4.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
A 1	0.026	0.132	0.120	0.112	0.026	0.026	0.121
A	0.038	0.072	0.109	0.085	0.028	0.033	0.089
B	0.032	0.074	0.095	0.073	0.027	0.030	0.081
C	0.026	0.080	0.067	0.065	0.028	0.027	0.071
D	0.029	0.076	0.070	0.065	0.031	0.030	0.070
E	0.031	0.055	0.077	0.067	0.039	0.035	0.066
F	0.032	0.058	0.061	0.064	0.039	0.036	0.061
G	0.032	0.068	0.059	0.061	0.035	0.034	0.063
H	0.040	0.057	0.058	0.075	0.031	0.036	0.063
I	0.049	0.059	0.057	0.063	0.039	0.040	0.058
K	0.036	0.067	0.053	0.061	0.030	0.033	0.060
L	0.032	0.065	0.050	0.059	0.026	0.029	0.058
M	0.029	0.060	0.046	0.057	0.033	0.031	0.054
N	0.028	0.055	0.053	0.054	0.027	0.028	0.054
O	0.026	0.050	0.041	0.046	0.027	0.027	0.046
P	0.024	0.043	0.052	0.038	0.026	0.025	0.044
Average						0.031	0.060

Table 7.—Sulphur in Large Open Hearth Ingot.

	1.	2.	3.	4.	5.	Average edge, 1 and 5.	Average center, 2, 3 and 4.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
A 1	0.057	0.182	0.164	0.187	0.043	0.050	0.178
A	0.047	0.157	0.134	0.140	0.046	0.047	0.144
B	0.042	0.116	0.124	0.135	0.040	0.041	0.123
C	0.035	0.137	0.121	0.139	0.037	0.036	0.132
D	0.031	0.100	0.122	0.123	0.035	0.033	0.115
E	0.033	0.124	0.080	0.116	0.040	0.037	0.107
F	0.035	0.102	0.101	0.126	0.035	0.035	0.110
G	0.032	0.080	0.102	0.115	0.034	0.033	0.099
H	0.030	0.090	0.104	0.103	0.033	0.032	0.099
I	0.030	0.090	0.099	0.104	0.035	0.033	0.098
K	0.029	0.093	0.091	0.096	0.035	0.032	0.093
L	0.028	0.098	0.095	0.080	0.038	0.033	0.088
M	0.027	0.077	0.082	0.080	0.042	0.034	0.080
N	0.028	0.081	0.095	0.064	0.032	0.030	0.080
O	0.042	0.068	0.106	0.071	0.042	0.042	0.082
P	0.045	0.054	0.066	0.060	0.048	0.047	0.060
Average						0.037	0.106

Table 8.—Sulphur in Small Bessemer Ingot.

	1.	2.	3.	4.	5.	Average edge, 1 and 5.	Average center, 2, 3 and 4.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
A	0.047	0.040	0.037	0.045	0.060	0.054	0.041
B	0.041	0.054	0.064	0.042	0.044	0.043	0.053
C	0.037	0.065	0.047	0.041	0.034	0.036	0.051
D	0.040	0.045	0.065	0.031	0.033	0.035	0.047
E	0.038	0.047	0.082	0.043	0.044	0.041	0.057
F	0.037	0.044	0.054	0.046	0.055	0.046	0.048
G	0.040	0.040	0.042	0.045	0.053	0.047	0.042
H	0.046	0.042	0.056	0.049	0.050	0.048	0.049
I	0.037	0.035	0.032	0.036	0.036	0.037	0.034
K	0.041	0.043	0.041	0.045	0.030	0.038	0.043
L	0.028	0.038	0.032	0.053	0.040	0.034	0.041
M	0.026	0.032	0.038	0.040	0.032	0.029	0.037
Average						0.041	0.045

Table 9.—Sulphur in Small Open Hearth Ingots.

	1.	2.	3.	4.	5.	Average edge, 1 and 5.	Average center, 2, 3 and 4.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
A	0.045	0.095	0.131	0.133	0.049	0.047	0.120
B	0.040	0.104	0.108	0.124	0.047	0.044	0.122
C	0.041	0.090	0.130	0.120	0.036	0.039	0.113
D	0.035	0.101	0.101	0.108	0.036	0.036	0.103
E	0.036	0.090	0.090	0.106	0.034	0.035	0.095
F	0.033	0.090	0.104	0.103	0.033	0.033	0.099
G	0.040	0.080	0.100	0.090	0.038	0.039	0.090
H	0.039	0.082	0.090	0.120	0.037	0.038	0.097
I	0.034	0.075	0.075	0.103	0.032	0.033	0.084
K	0.033	0.063	0.054	0.066	0.030	0.032	0.061
L	0.032	0.057	0.108	0.060	0.030	0.031	0.075
M	0.034	0.058	0.056	0.054	0.031	0.033	0.056
Average						0.037	0.092

By again taking all the results from the edge and all from the center and averaging them, a table may be drawn up. It is as follows:

Table 10.—Segregation of Sulphur.

Ingot.	Composition.—Edge.	Composition.—Center.	Segregation.—Absolute.	Segregation.—Per ct.
Large Bessemer	0.025	0.0615	0.0365	146.0
Large open hearth	0.035	0.0985	0.0655	187.1
Small Bessemer	0.039	0.043	0.004	10.3
Small open hearth	0.038	0.086	0.048	126.3

It is very plainly evident that in the large ingots,

which cool more slowly, there is much more segregation than in the small ones.

Phosphorus Segregation

In the tables following are shown the results of the phosphorus determinations on the longitudinal sections:

Table 11.—Phosphorus in Large Bessemer Ingot.

	1.	2.	3.	4.	5.	Average edge, 1 and 5.	Average center, 2, 3 and 4.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
A1	0.061	0.194	0.162	0.158	0.056	0.059	0.168
A	0.050	0.099	0.135	0.121	0.064	0.057	0.118
B	0.047	0.102	0.116	0.117	0.067	0.057	0.112
C	0.049	0.106	0.112	0.120	0.057	0.053	0.113
D	0.053	0.103	0.094	0.120	0.074	0.064	0.106
E	0.049	0.099	0.098	0.110	0.067	0.058	0.102
F	0.045	0.098	0.091	0.113	0.067	0.056	0.101
G	0.050	0.108	0.088	0.108	0.068	0.059	0.101
H	0.054	0.085	0.083	0.117	0.057	0.056	0.095
I	0.054	0.091	0.078	0.106	0.060	0.057	0.092
K	0.051	0.093	0.083	0.102	0.069	0.060	0.093
L	0.045	0.093	0.083	0.102	0.053	0.049	0.093
M	0.047	0.083	0.080	0.096	0.053	0.050	0.086
N	0.042	0.071	0.083	0.089	0.049	0.046	0.081
O	0.045	0.070	0.082	0.089	0.053	0.049	0.080
P	0.044	0.072	0.083	0.071	0.048	0.046	0.075
Average						0.055	0.101

Table 12.—Phosphorus in Large Open Hearth Ingot.

	1.	2.	3.	4.	5.	Average edge, 1 and 5.	Average center, 2, 3 and 4.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
A1	0.061	0.147	0.154	0.168	0.069	0.065	0.126
A	0.065	0.131	0.115	0.125	0.052	0.059	0.124
B	0.046	0.108	0.120	0.125	0.052	0.050	0.118
C	0.046	0.117	0.112	0.126	0.053	0.050	0.118
D	0.048	0.101	0.112	0.150	0.052	0.050	0.121
E	0.045	0.105	0.108	0.124	0.052	0.049	0.112
F	0.046	0.100	0.109	0.104	0.052	0.049	0.104
G	0.050	0.100	0.096	0.106	0.053	0.052	0.101
H	0.046	0.093	0.104	0.105	0.055	0.051	0.101
I	0.053	0.089	0.095	0.101	0.056	0.055	0.095
K	0.048	0.098	0.090	0.102	0.057	0.053	0.097
L	0.046	0.087	0.093	0.090	0.052	0.049	0.090
M	0.060	0.079	0.077	0.086	0.052	0.056	0.081
N	0.045	0.068	0.098	0.075	0.050	0.050	0.080
O	0.045	0.070	0.095	0.075	0.048	0.047	0.080
P	0.045	0.066	0.076	0.076	0.057	0.051	0.072
Average						0.052	0.103

Table 13.—Phosphorus in Small Bessemer Ingot.

	1.	2.	3.	4.	5.	Average edge, 1 and 5.	Average center, 2, 3 and 4.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
A	0.093	0.080	0.061	0.078	0.097	0.095	0.110
B	0.082	0.093	0.092	0.076	0.080	0.081	0.087
C	0.070	0.096	0.083	0.074	0.066	0.068	0.084
D	0.066	0.082	0.064	0.056	0.065	0.066	0.067
E	0.051	0.051	0.115	0.068	0.057	0.054	0.078
F	0.047	0.066	0.062	0.058	0.072	0.060	0.062
G	0.061	0.061	0.062	0.056	0.066	0.064	0.060
H	0.061	0.056	0.059	0.062	0.061	0.061	0.059
I	0.058	0.060	0.051	0.057	0.047	0.053	0.056
K	0.053	0.067	0.063	0.061	0.057	0.055	0.064
L	0.081	0.060	0.059	0.073	0.062	0.072	0.064
M	0.092	0.062	0.058	0.064	0.055	0.074	0.061
Average						0.067	0.074

Table 14.—Phosphorus in Small Open Hearth Ingot.

	1.	2.	3.	4.	5.	Average edge, 1 and 5.	Average center, 2, 3 and 4.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
A	0.048	0.081	0.106	0.112	0.046	0.047	0.100
B	0.042	0.107	0.109	0.115	0.043	0.043	0.110
C	0.040	0.094	0.107	0.096	0.035	0.038	0.099
D	0.037	0.086	0.093	0.097	0.042	0.040	0.092
E	0.037	0.095	0.090	0.093	0.036	0.037	0.093
F	0.040	0.082	0.091	0.086	0.037	0.039	0.086
G	0.044	0.075	0.086	0.080	0.040	0.042	0.080
H	0.040	0.074	0.088	0.105	0.055	0.048	0.089
I	0.045	0.087	0.095	0.110	0.050	0.048	0.097
K	0.048	0.083	0.066	0.076	0.039	0.044	0.075
L	0.050	0.080	0.108	0.074	0.042	0.046	0.087
M	0.060	0.074	0.080	0.076	0.042	0.051	0.077
Average						0.044	0.080

In a similar manner to those of the carbon and sulphur the results of the edge and of the center of all the sections may be brought together in a table. This is as follows:

Table 15.—Segregation of Phosphorus.

Ingot.	Composition. Edge.	Composition. Center.	Segregation. Absolute.	Segregation. Per ct.
Large Bessemer	0.054	0.0965	0.0425	78.7
Large open hearth	0.0525	0.0838	0.0313	59.6
Small Bessemer	0.070	0.075	0.005	7.1
Small open hearth	0.048	0.083	0.035	72.9

Excluding the small Bessemer ingot as abnormal, the large ingots show less segregation than the small ones. This was also noticed in the case of the carbon.

Manganese Segregation

The detailed results of the manganese determinations will not be given. There is a tendency to segregation, as is shown below:

Table 16.—Segregation of Manganese.

Ingot.	Composition. Edge.	Composition. Center.	Segregation. Absolute.	Segregation. Per ct.
Large Bessemer	0.52	0.56	0.04	7.7
Large open hearth	0.38	0.40	0.02	5.2
Small Bessemer	0.59	0.52	...	...
Small open hearth	0.421	0.466	0.045	10.7

Copper Segregation

This was only determined on the open hearth ingots. The average results for the edge and center are 0.303 per cent., and 0.377 per cent. for the large ingot, 0.300 and 0.373 for the small one.

Physical Tests

As mentioned before, two small ingots one Bessemer and one open hearth were rolled to 1.34 in. in diameter rounds. After blooming the Bessemer ingot was cut in three pieces and the open hearth in four. When these pieces were rolled test pieces were cut for tensile and shock tests. One series of tensile bars was made 7.87 in. between centers, 0.78 in. in diameter. Another series were turned down to 0.39 in. in diameter and 3.94 in. long. The latter were to show the influence of segregation. The material was tested in two conditions—one after heating in a gas muffle to 1000 degrees C., cooling to 950 degrees C. and quenching in ice water, the other after heating to 1000 degrees C. and cooling very slowly. The results of the tensile tests are shown in Tables 17 and 18:

Table 17.—Tensile Strength of Quenched Steel.

Material.	Elastic limit, pounds. 0.78-in. diameter.	Elastic limit, pounds. 0.39-in. diameter.	Ultimate stress, pounds. 0.78-in. diameter.	Ultimate stress, pounds. 0.39-in. diameter.	Elongation. 0.78-in. diameter.	Elongation. 0.39-in. diameter.	Reduction of area. 0.78-in. diameter.	Reduction of area. 0.39-in. diameter.
Bessemer, head	48,500	.....	78,795	90,330	10.7	16.5	30.0	39.9
Bessemer, middle	49,496	.....	76,662	83,261	12.2	17.0	35.1	38.2
Bessemer, base	52,198	.....	84,056	76,050	12.3	18.2	28.6	41.2
Open hearth, head	56,181	.....	84,342	93,033	11.6	13.9	22.8	35.1
Open hearth, upper middle	63,292	.....	87,044	89,776	12.9	14.9	24.1	33.5
Open hearth, lower middle	60,874	.....	83,915	82,579	13.8	15.8	27.8	37.7
Open hearth, foot	59,025	.....	82,067	83,261	14.6	16.4	33.2	38.5

Table 18.—Tensile Strength of Annealed Steel.

Material.	Elastic limit, pounds. 0.78-in. diameter.	Elastic limit, pounds. 0.39-in. diameter.	Ultimate stress, pounds. 0.78-in. diameter.	Ultimate stress, pounds. 0.39-in. diameter.	Elongation. 0.78-in. diameter.	Elongation. 0.39-in. diameter.	Reduction of area. 0.78-in. diameter.	Reduction of area. 0.39-in. diameter.
Bessemer, head	33,140	.....	56,039	55,185	28.2	28.1	42.1	47.6
Bessemer, middle	31,575	.....	52,483	56,323	28.4	27.5	46.3	47.6
Bessemer, base	32,428	.....	55,043	56,465	28.1	25.0	43.0	49.2
Open hearth, head	45,087	.....	61,017	54,616	26.0	26.1	39.2	45.6
Open hearth, upper middle	43,380	.....	59,310	61,159	28.2	22.6	38.5	40.5
Open hearth, lower middle	40,678	.....	56,892	55,470	30.5	32.4	43.6	49.4
Open hearth, base	41,531	.....	55,327	57,461	30.0	28.2	44.6	49.8

The shock tests were made on square pieces 0.78 x 0.78 in. and 4.7 in. length tested. The machine was a pendulum hammer of 542.3 ft.-lb. The average results are given in Table 19:

Table 19.—Shock Tests.—Foot-Pounds.

Material.	Head.	Upper middle.		Lower middle.	Base.
Bessemer, quenched	72.1	...	121.7	...	126.5
Open hearth, quenched	44.0	59.4	....	86.2	100.8
Bessemer, annealed	15.1	...	21.7	...	18.8
Open hearth, annealed	49.5	73.0	....	86.9	95.7

Conclusions

1. The analyses show the amount and distribution of the segregation.

2. Sulphur and phosphorus segregate the most; carbon, manganese and copper giving lower results.

3. Sulphur shows more segregation in the case of the large ingots. The reverse is true of phosphorus, carbon and manganese.

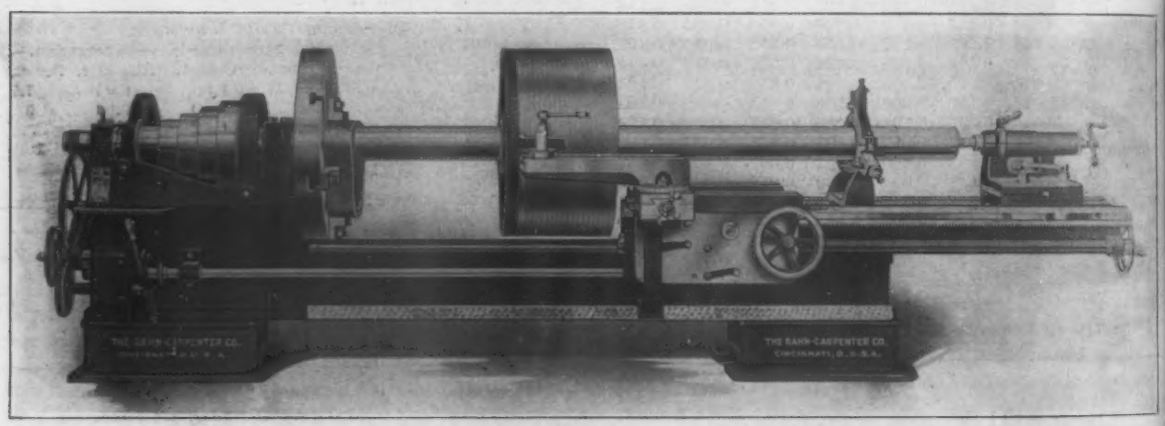
4. The influence of the segregation on the tensile tests is not very considerable, but the ductility is considerably affected.

5. The greatest effect is seen in the shock tests, the segregated material being very unreliable and brittle.

G. B. W.

The Rahn-Carpenter Gap Lathe

A tool designed to meet the requirements of repair and jobbing shops where a large range and variety of work is to be done at a minimum expenditure for equipment has been brought out by the Rahn-Carpenter Company, Cincinnati, Ohio. As was announced under New Tools and Appliances in *The Iron Age*, June 30, 1910, the company has redesigned its 24-40 in. sliding bed gap lathe to swing 24-48 in., and the new model, with double back gears and a three-step cone pulley, is shown in the accompanying engraving.



A New Extension Bed Gap Lathe Built by the Rahn-Carpenter Company, Cincinnati, Ohio.

The top bed, which is 12 in. deep, slides along the lower one, the depth of which is ¾ in. greater, and can be adjusted to any width of gap required, within the range of the lathe. The shortest length of bed in which this lathe is made is 10 ft. This size will take work when the gap is closed measuring 5 ft. between centers and with the gap open, 8 ft. overall. For each additional 2 ft. in length of bed 3 ft. additional between centers can be obtained with the gap open. Both beds are very heavily constructed and are firmly braced throughout their entire length with box girders, to absorb the vibration of the heaviest cut. The sliding bed is accurately planed and fitted into the lower one, and as the carriage and tailstock are moved along with it, perfect alignment with the head spindle is assured in all positions. The bed is moved by a hand wheel and coarse pitch screw at the rear of the lathe.

The carriage is gibbed to the bed, both front and back, and provides a broad bearing for the rest. It has a long, continuous bearing of 31 in. on the bed and can be firmly locked to it for cross feed work. The construction is such that the tool rest can be brought close up to the gap when required and the front of the carriage is extended and firmly braced, thus allowing extra travel for the compound rest, in order that the tool may operate on the greatest diameter that can be swung in the gap. A large range of both longitudinal and cross feeds are provided, any one of which is instantly available without stopping the lathe by shifting a lever on the feed change box.

This lathe is very heavy, the weight of the one with a 10-ft. bed being over 7000 lb., which is increased 625 lb. for each additional 2 ft. of bed length.

The Globe Seamless Steel Tubes Company's New Plant

The Globe Seamless Steel Tubes Company, Milwaukee, Wis., is making rapid progress in the construction of its large plant. The main building will be practically completed and under roof within a week and the foundations for the heavy equipment are also nearing completion. The boilers and a large part of other material for the equipment are now on the ground, and it is expected that the company will be ready for operation early in November. The main building is about 250 x 500 ft., but with side bays which are under construction the building will be practically 300 x 600 ft. The annealing ovens and finishing departments will be located in the side bays, leaving the central part of the main building for the machinery used for piercing, rolling and drawing tubes. There will be several auxiliary buildings in the plant, and one of these contemplated buildings will be occupied by the trolley pole department. The capacity of the plant will be about 2000 tons of finished tubing per month.

Baltimore gained only 9 per cent. in population between 1900 and 1910, the Census Bureau reporting 559,485 for this year against 508,957 in 1900. Cleveland, with a population of 560,663, has thus replaced Baltimore as the sixth city in the United States. Should St. Louis and Boston, which are respectively the fourth and fifth cities, gain but 19 per cent. in the next decade, as in the last one, and Cleveland continue the gains of the past two decades—46.9 and 46 per cent., respectively—Cleveland will have passed both these cities by 1920.

Wool, for the third time in a decade, is selling at a lower price in Boston, Mass., than in Europe, thus inducing considerable sales for export. It is of course unlikely that this condition will be of long duration. Nevertheless, the fact is of interest in view of the present discussion of the tariff question.

The Farwell Gear Tester

The latest addition to the line of gear machines built by the Adams Company, Dubuque, Iowa, is the Farwell gear testing machine, designed for testing spur gears up to 30 in. between centers. Any inaccuracy in the diameter or the depth of teeth is shown and skew teeth or gears cut eccentrically with the bore are detected. The machine also shows the clearance and running of a pair of gears on the correct center distances. Fig. 1 is a front view of the machine and Fig. 2 shows the micrometer dial employed for reading the center distances.

The machine consists of a horizontal table, with a graduated rail on its upper front edge, and two heads, one stationary and one sliding, in which arbors are inserted for mounting the gears to be tested. The sliding head is moved and set by a screw operated by a crank handle, which is provided with a ratchet relief to act as a safety device and prevent injury to the various parts by careless jamming of the gauge or gears. The screw controlling the sliding head is accurately cut, and to minimize any error due to its expansion or contraction a 12-in. micrometer is furnished, which may be used to check up the setting of the micrometer disk on the end of it, shown in Fig. 2. In this way it is said that the error either way from a 12-in. setting probably would not exceed more than 0.00025 in. In checking the adjustment with this gauge the screw on the micrometer or gauge is used, the gauge being set at 11½ in. when ½-in. arbors are used, or 11-in. when 1-in. arbors are used.

The rail is graduated to read to inches and tenths; the micrometer disk is graduated to read thousandths, and a block on the head will read to one-quarter of these divisions. The screw is supported in the stationary head by a series of collars having angular sides and runs like an Acme thread screw in split babbitt nuts. The lower thumb nut in the head enables the nuts on the screw and collars to be kept as tight and free from lost motion as is consistent with the free working of the screw. A gib provided with a thumb screw adjustment prevents possible lost motion in the sliding head on the rail.

In testing gears with this machine the arbors are placed in the vertical holes and the gears mounted thereon for testing center distances, as shown in both engravings. In testing gears for noise the arbors are placed in the holes shown in the front of the heads in Fig. 1, and the gears are driven by a belt, while the center distance is adjusted to a point where they run best.

A shelf running the entire length of the bed is used to hold the gauges, arbors, bushings, &c., when the machine is in use, and a cabinet in the column provides room for storage. The equipment furnished includes two ½-in. and 1-in. arbors and a 12-in. micrometer checking gauge.

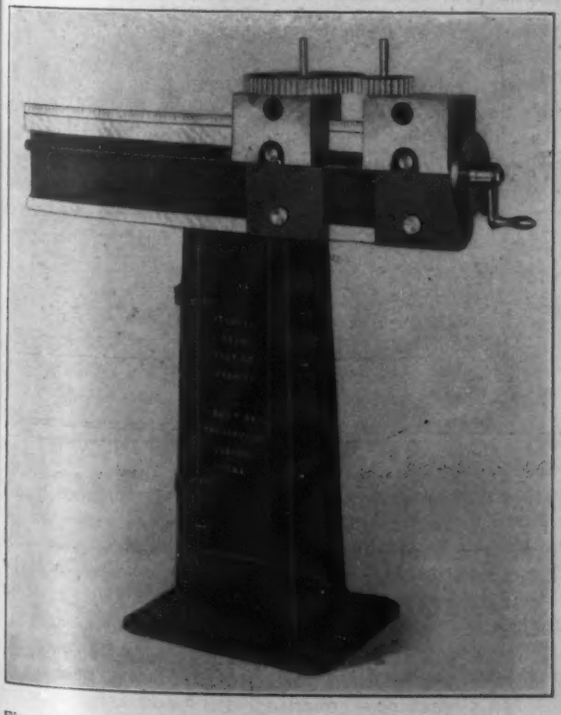


Fig. 1.—The New Farwell Gear Testing Machine Made by the Adams Company, Dubuque, Iowa.

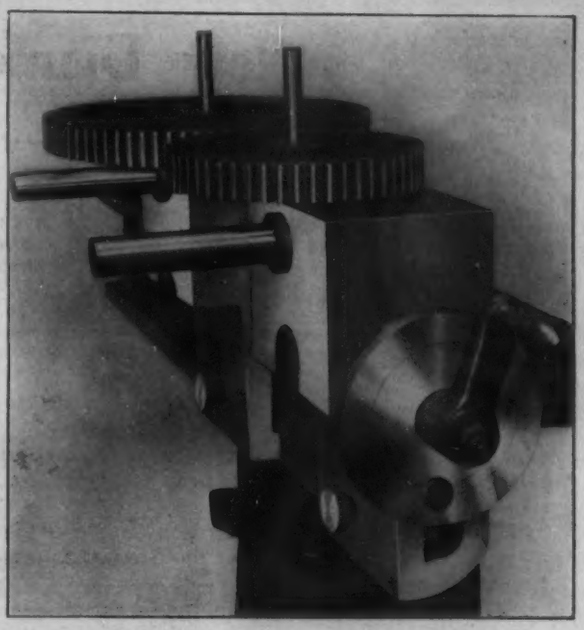


Fig. 2.—Micrometer Dial Used for Reading Center Distances of Gears Tested.

Iron Ore Shipments from Cuba

The American Iron and Steel Association's statistics of Cuban iron ore production in 1909 credit the Juragua Iron Company with 389,926 gross tons, the Spanish-American Iron Company with 524,949 tons and other companies with 53,983 tons—a total of 968,858 tons, as compared with 699,735 tons, the largest previous production, made in 1902. The total shipments of the Juragua Iron Company, which began in 1884 and have continued through all the intervening years, were 5,285,023 tons to the end of 1909. Beginning in 1895, the Spanish-American Iron Company has shipped a total of 4,791,093 tons. Shipments by all other companies have been 115,662 tons, making a grand total of 10,191,778 tons. The total of 115,662 tons shipped by "other companies" than the two leading producers, is made up of 6,418 tons in 1892 and 14,020 tons in 1893 by the Sigua Iron Company, 17,651 tons in 1901 and 23,590 tons in 1902 by the Cuban Steel Ore Company, and 53,983 tons in 1909 by the Ponupo Manganese Company, which is owned by Charles F. Rand, Jennings S. Cox, Jr., and Pedro Aguilera. The Ponupo company's iron mine is at El Cuero. Its manganese ore shipments from Ponupo in 1909 were 2885 tons, against 1484 tons in 1908.

Shipments from the Pennsylvania Steel Company's (Spanish-American Iron Company) Mayari deposits in 1909 were 5196 tons, but in recent months the rate has been 45,000 tons a month.

The Frick Company, Waynesboro, Pa., has placed an order with Tate, Jones & Co., Inc., Pittsburgh, Pa., for a large plate heating furnace, 8 x 10 ft. inside. This will be equipped with Kirkwood fuel oil burning appliances.

New Diamond Grinders

Four Improved Lines of Grinding and Polishing Machines

Among the new or most recently improved products of the Diamond Machine Company, Providence, R. I., are a traveling head face grinder, a heavy disk grinder, a motor driven polisher and an under belted polisher. The first is a machine designed for heavy grinding on work of such shape and size as to make it more advantageous to move the wheel head than the work. It is especially fitted for grinding the ends of long pieces, such as cast iron building columns, built-up steel columns, &c. It is also employed for grinding heavy pieces of various shapes, the finishing of which would otherwise be impossible without the use of a very heavy and expensive machine. The disk grinder is claimed to be the largest and heaviest on the market and is intended for extra heavy work which the ordinary medium size disk grinders are not capable of handling. The motor driven polisher is a redesigned machine, with several improved features, explained later, and the under belted polisher is a response to the demand for an entirely inclosed machine driven from below.

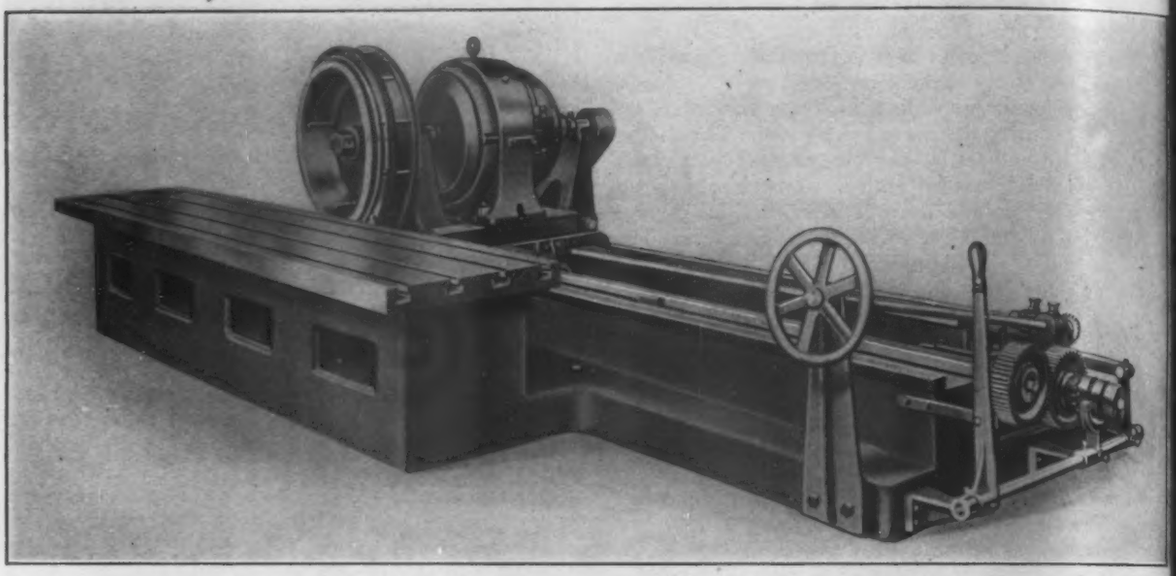


Fig. 1.

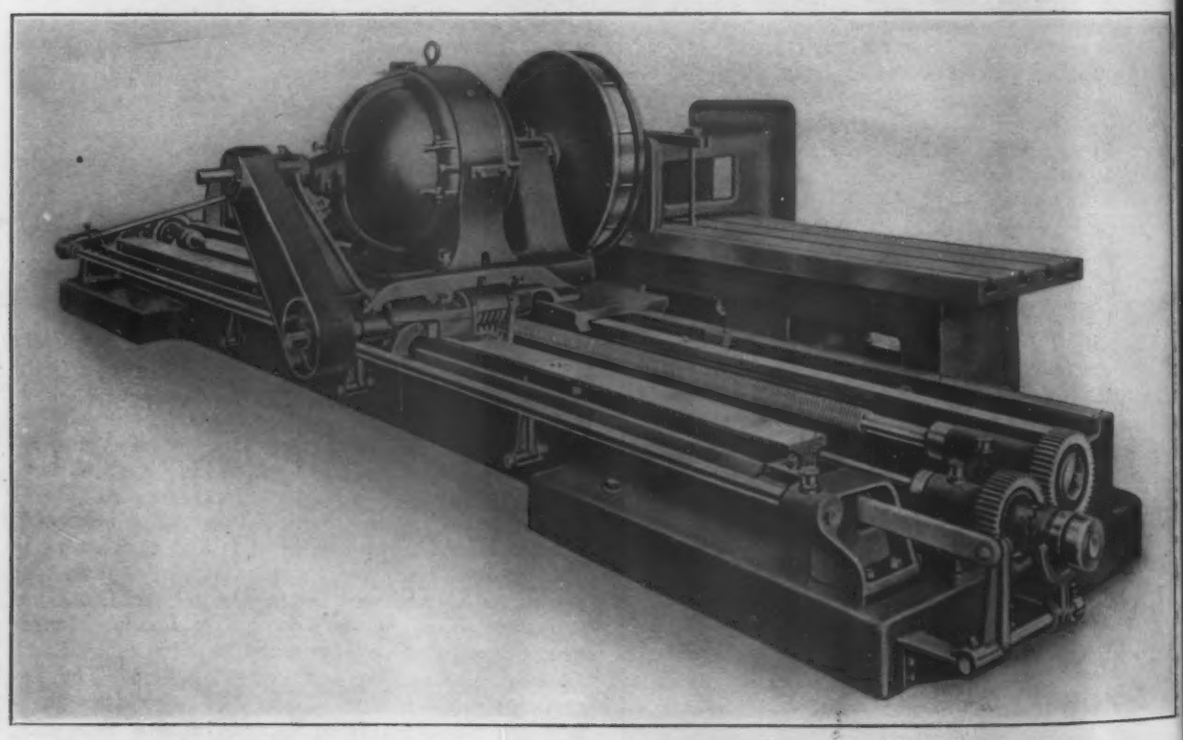


Fig. 2.

Two Views of the New Traveling Head Face Grinder Built by the Diamond Machine Company, Providence, R. I.

Traveling Head Face Grinder

This machine, shown in Figs. 1 and 2, has a heavy table cast in box form, and will support the heaviest work without distortion. The grinding wheel fur-

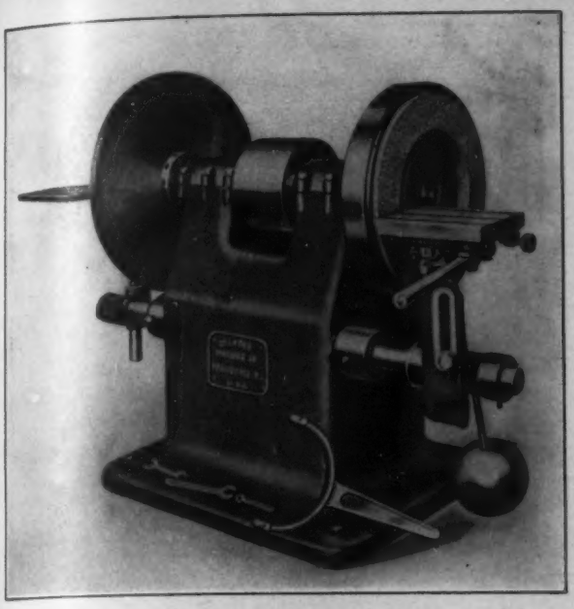


Fig. 3.—The No. 6-X Extra Heavy Diamond Disk Grinder.

nished with the machine can be of any abrasive desired. It is held in an adjustable chuck, which makes the wheel absolutely safe from bursting, and at the same time allows the wheel to be fed forward in the chuck, thus getting the maximum amount of wear from the wheel. The motor is mounted upon the grinding wheel spindle, and has sufficient power for the heaviest work. The front bearing for the emery wheel spindle is a ring oiling bronze box held in a massive support cast solid with the traveling head.

The longitudinal feed of the wheel head is obtained from the rear end of the emery wheel spindle through a belt and gearing, the belt acting as a safety clutch and slipping in case the abrasive wheel encounters any obstruction. From the same source the automatic feed of the wheel to and from the work is obtained. The longitudinal feed is automatic, its direction being changed either automatically or by a hand lever conveniently placed. The operator of the machine has all necessary control of the machine from one point.

In its details the machine has been carefully worked out. Liberal means for oiling are provided for all bearings, both cylindrical and sliding. All gears are cut and are of suitable material for the work they have to do.

The principal dimensions of the machine are given below, but the length of the table can be changed to suit the requirements.

Total travel of head, inches	144
Size of bed plate, inches	73 x 216
Size of table, inches	25 x 144
Hight of table from floor, inches	24
Length of main ways, inches	216
Distance across ways, inches	32
Length of slide bearings, inches	60
Cross feed of head, inches	4
Hight of center of spindle, inches	34
Speed of wheel, revolutions per minute	625
Diameter of spindle in bearings, inches	3½
Length of spindle bearings, inches	10
Wheel, inches	30 x 6 x 26

No. 6-X Heavy Disk Grinder.

The work for which the machine shown in Fig. 3 is designed is the grinding of automobile cases, feet of motor frames, sides of large wrenches and any other surfaces where a finish is desired. It was found necessary for this heavy grinding where considerable stock had to be removed to use an abrasive wheel in place of a disk. Therefore, this machine has been built with one end of the spindle carrying a steel bound chuck with an abrasive ring and the other a steel disk for emery circles. On the side of the machine which has the disk is an ordinary plain table, as this side of the machine is not used for such heavy work as the other and a man can hold the work against the disk without excessive fatigue.

The other side, which has the large abrasive ring wheel, is intended to remove the greater amount of stock and do it more rapidly than the other. This side of the machine is therefore equipped with a sliding table operated by a hand lever. The work can be held in any jig, which in turn is bolted to the T slots on the sliding table. The sliding table is provided with a micrometer stop, thus producing duplicate parts. The sliding table is operated by a hand lever which not only brings the work up against the wheel but also rocks the work back and forth over the face of the wheel, thus using the entire surface of the wheel. The wheel can be dressed quickly and economically by fastening a wheel dresser on the sliding table top and then rocking the table back and forth over the face of the wheel. The table is balanced by a counterweight hanging out of the way, below the stud, which supports the table.

The entire construction of this machine is extremely massive and heavy. The emery spindle bearings are babbitted and ring oiling. The stud which supports the tables is of extra large diameter. With the machine are furnished all necessary wrenches, a press for cementing emery circles to the disk and a countershaft.

The dimensions are as follows:

Hight from base to center of spindle, inches	36
Size of base, inches	32 x 41
Diameter of spindle in bearings, inches	3
Length of spindle, inches	41½
Length of bearings, inches	12
Size of pulley, inches	12 x 8½
Diameter of disk, inches	30
Size of emery ring, inches	22 x 17 x 2½
Speed, revolutions per minute	900
Size of plain table, inches	14 x 30¾
Size of sliding table, inches	8½ x 12
Weight, crated, ready for shipment, pounds	1,500

No. 3 Motor-Driven Polisher.

Fig. 4 shows this machine, which has lately been redesigned to make it self-cooling and to allow it to be operated without the necessity of opening the base of the machine. The cooling is obtained by placing a fan on the spindle of the machine close to the armature on the side outside the commutator and by placing inlets and outlets on the ends of the motor frame. By this means while the machine is in motion the fan is drawing cool air through the parts of the motor which ordinarily heat up, and discharging it outside of the machine. The inlet may be connected with the outside air or any place from which clean air can be obtained.

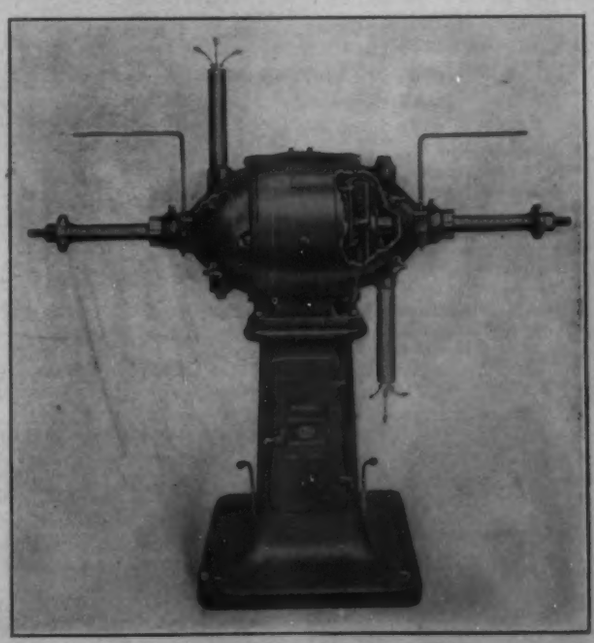


Fig. 4.—The No. 3 Diamond Air-Cooled Motor-Driven Polisher.

The discharge may be carried to a dust collector or discharged anywhere the dust is not objectionable.

A polisher or grinder electrically driven requires that the products of grinding or polishing be kept from the electrical parts as much as possible. This in turn necessitates using an inclosed motor. When the motor

Fig. 5.—The No. 8 Diamond Polisher Belted from Beneath, with Countershaft Contained in the Base.

is developing a good deal of power the entire machine necessarily becomes very hot. This undesirable condition is prevented by the arrangement of the fan with the inlet and outlet connections. This machine is rated at 10 hp. and under actual service for short intervals has produced double this horsepower; the amount of power obtainable depends solely upon the motor, and as it cannot get hot the machine will develop as much power as a light motor entirely open.

In previous machines it has been necessary to open a door in the column to throw the switch and also to get at the regulator. In this machine a lever projects on each side of the machine which can be moved by the operator's foot to throw off the switch. Another lever, not shown in the engraving, operates the controller. The machine is provided with bronze ring oiling bearings each 5¾ in. long.

The builder is now shipping an order of 20 of these machines to one purchaser. The dimensions are as follows:

Maximum wheel taken, inches	16 x 3¼ x 1¼
Size of base, inches	26 x 26
Hight from floor to center of spindle, inches	39
Diameter of spindle in bearings, inches	1⅝
Diameter of spindle between flanges, inches	1¼
Length of spindle, inches	60
Diameter of body, inches	17¼
Horsepower	10
Distance between wheels, inches	45⅞
Speed, revolutions per minute	2,300
Weight, crated for shipment, pounds	900

No. 8 Polisher

In designing the polisher, of which a view is given in Fig. 5, it was found desirable to include the countershaft in the base of the machine, as it would be awkward to make a hole through the floor to ship the belt on the countershaft. The belt is shipped by turning the handle shown projecting through the front of the column, which in turn through a linkage moves the belt. The machine can be driven from above by removing the cap over the pulleys. The dimensions of this machine are as follows:

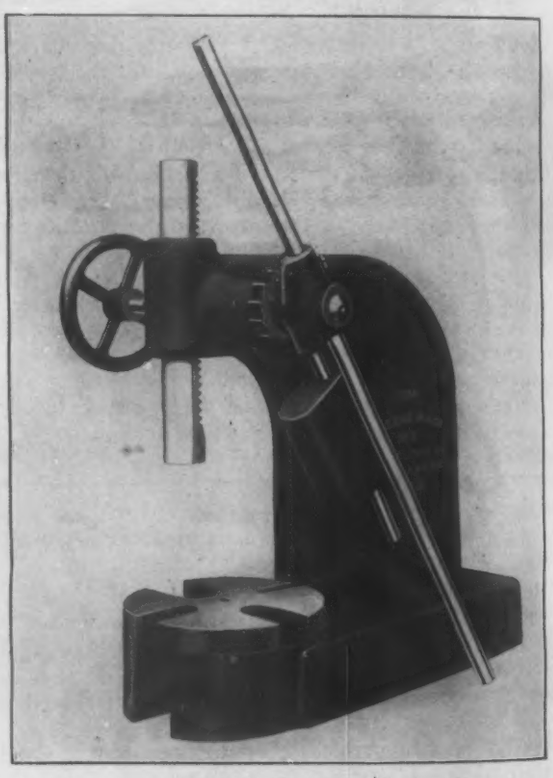
Diameter of spindle in bearings, inches	1⅝
Diameter of spindle between flanges, inches	1¼
Length of spindle, inches	54
Hight from floor to center spindle, inches	38
Size of base, inches	25 x 33½
Size of tight and loose pulleys, inches	6 x 4¼

The machine is very strong and heavy throughout, with liberal surface in the bearings. The long bearings enable a very long spindle to be used, so that large and awkward shaped work can be handled successfully on this machine. At the same time the bearings are supported by heavy brackets cast with the column. One end of the spindle is provided with a removable taper point, as shown in the cut.

The New Cleveland Arbor Press

An unusually heavy arbor press, recently placed on the market by the Cleveland Machine Specialty Company, Cleveland, Ohio, which is designated as its No. 5 arbor press, is shown herewith. The cast iron frame is of box construction with a base 5½ in. high and heavily ribbed to the full depth of the frame. The lever, which is of tool steel, is counterweighted and, when released, rises to the vertical position, where the pawl is automatically raised from the ratchet wheel so that the ram can be quickly adjusted to or from the work by the hand wheel.

The press will take work 20 in. in diameter by 15



The No. 5 Arbor Press Made by the Cleveland Machine Specialty Company, Cleveland, Ohio.

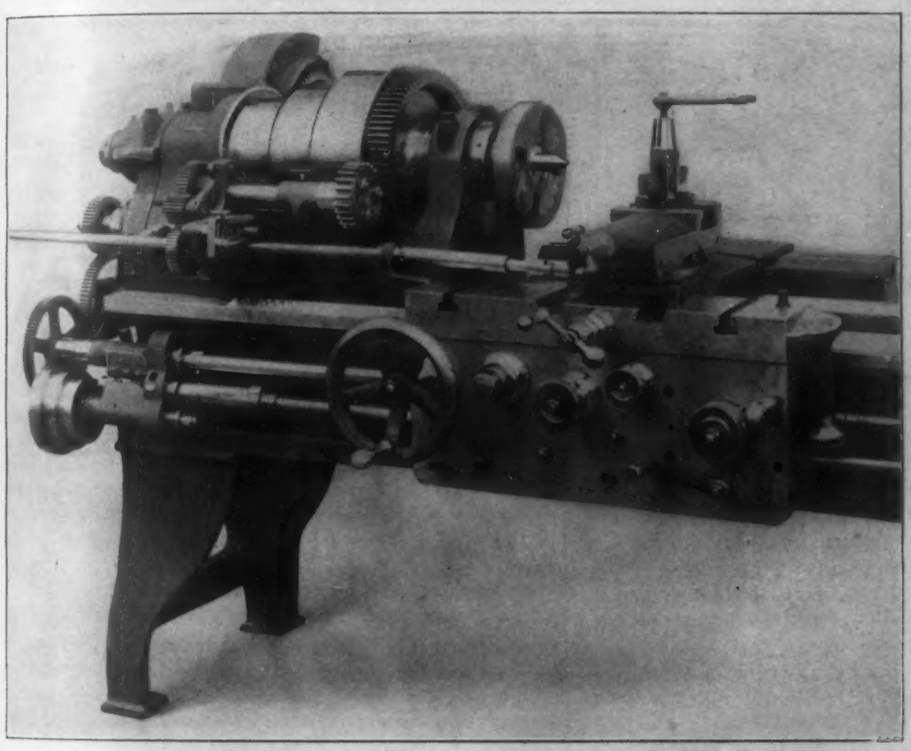
in. high, and will press a 3-in. arbor, exerting a pressure of 6 tons. The machine weighs 430 lb. net, and is designed to withstand the rough usage to which these machines are often subjected.

The Ellwood City Forge Company, Ellwood City, Pa., recently organized by a number of former employees of the Tindel-Morris Company, has its new plant nearly completed. The building is finished and the machinery is now being installed. The company will manufacture crank shafts, connecting rods, die blocks and machine forgings. J. A. Evans is president.

The New Bradford Lathe Relieving Attachment

For backing off the teeth of reamers, taps, hobs, mills, &c., the Bradford Machine Tool Company, Cincinnati, Ohio, has brought out the relieving attachment illustrated herewith. This is furnished with its 14, 16, 18, 20 and 22 in. lathes and the 18-in. heavy pattern lathe regularly, but can be had with other sizes if ordered. The lathe shown in the engraving is the 21-in. model. In conjunction with the Bradford taper attachment this attachment will relieve straight or taper work of any number of flutes, from 2 to 24, inclusive.

One of the novel features of the attachment is the connection between the connecting rod and the rock shaft, which facilitates the easy longitudinal movement of the latter even on coarse pitch taps and heavy cuts. The crank is fastened to an inner sleeve and is driven by an outer bush. The sleeve drives the rock shaft through a key, but is capable of an automatic limited longitudinal movement with relation to the rock shaft, entirely independent of its driving connection, a strong spring returning it to its original position after each cut. This construction is said to overcome any tendency of sticking or binding of the rock shaft.



A 21-In. Lathe Equipped with the New Relieving Attachment Made by the Bradford Machine Tool Company, Cincinnati, Ohio.

A strong substantial bracket is built as a separate unit, with all parts self-contained to insure permanent alignment and correct action of the parts, and is mounted on the headstock, as shown in the engraving. Its position is easily accessible and in plain sight of the operator, which does away with the necessity of going to the rear of the lathe to make adjustments and remove or replace the change gears. The attachment is driven by a spur gear which meshes with the face gear, and not by the spindle gear, as in other makes. This possesses the advantage that the attachment has its speed varied in the same degree as the work, thus avoiding abnormal gear ratios and small driven pinions or a multiplicity of gears to provide for the 2 to 24 movements per revolution of the spindle. It is said that heretofore this feature has been entirely overlooked and the result has been either a clumsy and heavy attachment or one that was not fitted for the severe stresses imposed.

A single fixed cam only is required with this attachment, and that is mounted on a large diameter shaft close to the bearing, thus providing the rigidity essential in a device of this kind. The cam actuates one arm of a lever through a roller, which as it is fixed in position on the lever receives a correct movement at all times. To obtain the desired amount of relief the derived motion of this roller is transmitted through the rocking lever and connecting rod to the rock shaft which transmits the movement to the compound rest. One end of the connecting rod is attached to a sliding block adjustable toward and away from the center of the rocking lever. This adjustment controls the amount of motion transmitted to the rock shaft, and is obtained through a knurled knob placed within easy reach of the operator. The amount of relief is thus quickly, easily and precisely adjusted to any amount that may be required and changes within the range of the attachment can be made without stopping the lathe.

One end of the rock shaft is carried in a bracket on the carriage, and the movement of this shaft is transmitted to a set of spur gears in the compound rest through a telescopic sleeve and knuckle joints. An eccentric hub on the side of one of the spur gears engages a bronze nut through which the top slide screw of the compound rest passes, and in this way the slide receives a rocking motion. A set of change gears and an index plate provide for the different numbers of movements per revolution of the spindle. The carriage of the lathe has full traverse between centers and the movements of the compound rest are always available. It is not necessary to remove the attachment for doing ordinary work, as it is engaged or disengaged by simply locking the small quadrant up or down. Gear guards are placed over all exposed gears, and can be readily removed when necessary.

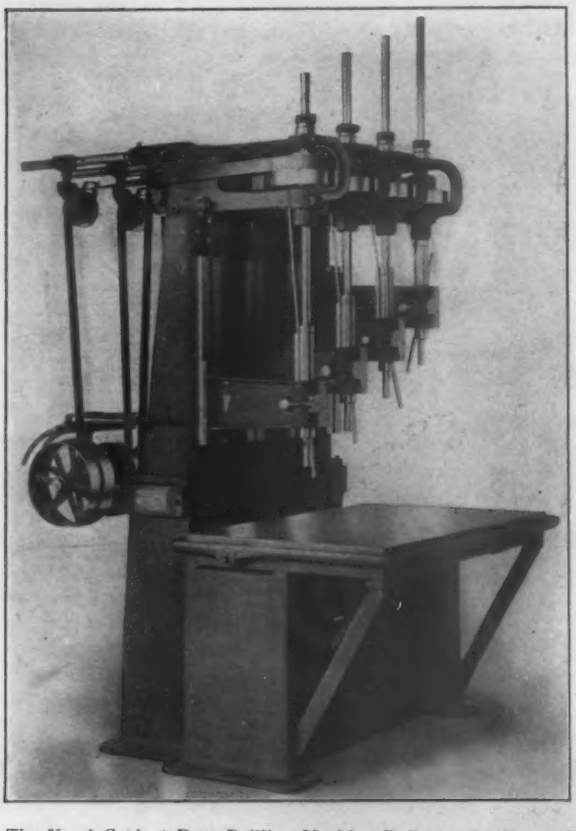
The gear meshing into the face gear is fixed to a flange keyed to the shaft in such a way as to provide an adjustment between the tool and the work without disconnecting. The cam used is of such a shape as to secure a uniform movement of the tool into the work, and it is quickly withdrawn by a strong spring provided with an adjustment by a nut and washer.

The International Acheson Graphite Company, Niagara Falls, N. Y., has opened a branch in Atlanta, Ga., the better to serve its many customers throughout the South. It is understood that the company is highly pleased with the appreciation shown for its lubricants—Gredag, Oildag and Aquadag—and its pure powdered graphite by Southern industries.

The U. S. Metal & Mfg. Company, City Investing Building, 165 Broadway, New York, has removed the offices of its Western department from the Railway Exchange Building to the eleventh floor of the new McCormick Building, Van Buren street and Michigan avenue, Chicago.

The Henry & Wright Cabinet Base Drilling Machine

A further development in the line of ball bearing high speed drilling machines built by the Henry & Wright Mfg. Company, 111 Sheldon street, Hartford, Conn., which were described in *The Iron Age*, August 4 and 25, 1910, is the No. 4 machine herewith illustrated. This machine is of particular interest to large manufacturers, where a great number of similar operations are constantly performed. The table is not adjustable, but is firmly fastened to the cabinet base to make it absolutely rigid and immovable in service, but by removing four screws it may be easily taken off for



The No. 4 Cabinet Base Drilling Machine Built by the Henry & Wright Mfg. Company, Hartford, Conn.

redressing to renew its accuracy. The head is of the same type as that used in the automobile manufacturers' drilling machine illustrated in an earlier article and the combination is said to be extremely rigid and unyielding. The under surface of the table is ribbed like a standard surface plate and it is possible to redress the top, as it is made very heavy. For removing the lubricant from the table four ducts, fitted with strainers, connect with a tank inside the base.

The maximum size high speed steel drill handled by the machine is 1⅛ in., but the most efficient field of operation is drilling holes ⅞ in. and smaller, the extra power being provided to drill the occasional larger holes that may occur in a piece of work in connection with small ones. This arrangement increases the working range of the machines, as a large number of parts that would either have to be drilled, tapped, counterbored or reamed in two or more machines may frequently be completed on one of them without removing the part from the jig, which tends toward greater interchangeability, accuracy, economy and rapidity in manufacturing.

The hole in the spindle is a No. 2 Morse taper, so that the taper of the larger drills must be reduced in order that they may fit the spindle. The machines can be furnished with plain tables or with full oiling equipment, including tank, pump, piping, flexible tubing and faucets, as ordered. The No. 4 machine is the first of the type produced and can be furnished for drilling to the centers of 16, 24 and 30 in. circles, but it is the ultimate intention of the manufacturer to make a greater variety. The weights of the three styles made are 3200, 3500 and 3800 lb., respectively.

New Tools and Appliances

Sensitive Drill Press.—The Albany Hardware Specialty Mfg. Company, Albany, Wis., is manufacturing a bench drill press of the sensitive type where the power is transmitted from the driving pulley to the spindle by two friction wheels and a hemispherical plate, mounted on a pivoted support and free to change its position relative to the wheels. This produces the variations in the spindle speed as the movement of the plate around its support causes one of the friction wheels to continuously move on a larger circle while the other is being moved to a smaller one. Ten speeds are available and an index plate is furnished showing the correct position for the lever controlling the movement of the plate for different sizes of drills boring in cast iron, steel or brass. A depth gauge and an adjustable stop are also included in the regular equipment of the tool which can handle drills up to ½ in. in diameter and will drill to the center of a 12-in. circle.

New Die Grinder.—F. L. Schmidt, Twenty-first street and Eleventh avenue, New York City, has brought out a new type of die grinder equipped with either a lever or screw table feed. The dies to be ground are fastened to the table and the latter swung under the wheel. Vertical adjustment for the table is provided by a hand wheel and fine pitch screw, and it can be clamped in any position by a locking screw. The cup wheels are mounted on opposite ends of the spindle and the whole swung from the horizontal to the vertical position or vice versa while the machine is in motion. Intermediate positions can be obtained by loosening the binding screw of the spindle. The drive is from a countershaft at the rear over two flanged idler pulleys which are free to slide on their stationary shafts and can be adjusted to the proper position when the spindle is swiveled.

Quick-Acting Wrench.—A wrench that can be instantly and conveniently adjusted to the desired size, or which may be locked and used as an ordinary monkey wrench, has been placed on the market by George W. Jessup, Jr., Newton, Mass. The handle is hollow and forms a receptacle for a detachable pipe jaw which makes it possible to grip pipe or other cylindrical work.

Lathe Quick Change Gear.—The New Haven Mfg. Company, New Haven, Conn., is equipping its 32, 36, and 42 in. lathes with a new type of quick change gear box which renders 32 different screw threads and the same number of gradations of feed available through the manipulation of two levers. One of these controls the movement of a nest of sliding clutch gears and affords four variations while the other operates in conjunction with a seven-step cone of gears and this nest to provide the balance, four variations being possible with each step. This box can be used to make changes while the lathe is running, without danger of breakage. If it is desired to cut threads or employ feeds not given on the index plate of the box these can be obtained by substituting change gears in the usual way.

Driving Wheel Lathe Tool Block.—A tool block for driving wheel lathes has been placed on the market by the Putman Machine Company, Fitchburg, Mass., which has a novel clamp. The lever used has a cam-like projection at one end while the other carries the clamping screw that impinges on a hardened block bearing against the top of the tool. This block is removable but is chained to the tool post to prevent its being lost. In practice the tool is placed under the lever and the block slipped into position under the end of the clamping screw. Tightening the screw, rocks the lever on its pivot and clamps the tool.

Trade Publications

Cutting Presses.—A. H. McCall, Rochester, N. Y. Booklet. Pertains to the Baxendale line of cutting presses for sheet metal, three of which are illustrated and described. One of these is especially intended for small cutting, perforating and forming dies; the second is an open front press which is made either upright or inclined for handling various kinds of work that cannot be done on a solid bed model, and the third is designed for cutting blanks, wiring work of various kinds and also for closing side seams on square, round and oval work.

Drilling Machines.—The Fosdick Machine Tool Company, Blue Rock, Apple and Palm streets, Cincinnati, Ohio. Catalogue. This is the company's latest catalogue describing and illustrating its complete line of radial drills and horizontal boring, drilling and milling machines. Each machine is illustrated, and this is followed by brief description and specifications. *The Iron Age*, April 29 and November 11, 1909, contained illustrated descriptions of the No. 0 and the Style A machines and an account of a notable piece of work done on one of the former was printed in the issue of May 26, 1910.

Electric Generators.—Triumph Electric Company, Cincinnati, Ohio. Two bulletins. No. 411, superseding No. 291, relates to a line of small direct-connected generating sets, which are made in sizes ranging from 4 to 25 kw., inclusive. The construction of these units is briefly described and a list of the principal dimensions is appended. No. 421, superseding No. 331, deals with the belted type of steel frame generators, built in sizes from ½ to 500 kw., those under 100 kw. having a bracket base while the larger ones are mounted on a pedestal. Details of the different parts are given, and this is supplemented by illustrations.

Steel Bridges and Steel Roofing.—McClintic-Marshall Construction Company, Pittsburgh, Pa. Blotters. Call attention to the bridge over the Ohio River at Beaver, Pa., recently completed by this company for the New York Central Lines, and the Aiken depressed roof construction for shops, which is said to possess the advantages of good light, no gutters and economy in installation and maintenance.

Ventilating Cowls.—The Pullman Automatic Ventilator Mfg. Company, York, Pa. Mailing card. Refers to the Pullman ventilating cowl, which is made in both round and rectangular styles of galvanized iron or copper with or without fire retarding dampers. The round model is made in sizes ranging from 3 to 120 in. in diameter, while any desired size of rectangular cowl can be made to order. Three illustrations show the cowl installed on a skylight, the square base type installed on the ridge of a roof and the Pullman cowl-standard ejector, which works on a principle that is practically the same as that of the ejector.

Special Wood Turning Lathes.—Gilman & Son, Inc., Springfield, Vt. Catalogue. Size 6 x 9 in.; pages 20. Refers to a line of lathes for turning odd shapes in wood, such as gun stocks, hat blocks, boot trees and lasts, golf heads and tackle blocks. In the catalogue all of these different machines are illustrated and the specifications occupy the facing pages. In addition to these lathes the firm is also prepared to build special machines to order.

Foundation Pumps.—Nye Steam Pump & Machinery Company, 565 Washington street, Chicago, Ill. Folder. Concerned with the Nye new model high-pressure pump, which is especially designed and adapted for wells or caissons in deep foundation and mining work. For this kind of work the pump is said to be cheaper than any other steam pump on the market, as it creates higher vacuum and will lift water by suction higher and more rapidly. It is guaranteed to deliver water at a hight of 150 ft., and is said to be the only pump made which will handle water containing sand or silt without damaging the mechanism. Other uses for which the pump is adapted are mining, railroad work, paper mills, chemical or gas works, tanneries, breweries, sugar refineries, draining quarries and for raising water for any kind of manufacturing or fire purposes.

Electric Hoists.—Pawling & Harnischfeger Company, Milwaukee, Wis. Folder entitled "Four Laborers Instead of Thirty." Contains a reprint of an article from the July issue of *Factory* describing an installation at the plant of the Simmons Mfg. Company, consisting of an electric traveling crane with two electric traveling hoists serving the storage yard and also the different cupola buildings by I-beam spur runways.

Chain Hoists.—American Hoist & Mfg. Company, Hamburg, Pa. Folder. Relates to the new Century hoist, which is simple in construction, light in weight and self-sustaining in any point. The housing is cast in one piece to provide for the lift wheel inside of it, and the chain guide will retain the chain on the handwheel at any angle.

Condensers.—Wheeler Condenser & Engineering Company, Carteret, N. J. Pamphlet. Contains a reprint of a paper entitled "Condensers for Small Central Stations," presented by Charles S. Lewis at the annual convention of the Missouri Electric, Gas, Street Railway and Waterworks Association, April 16, 1910. There are a number of useful tables, charts and curves relating to the operation and economy of condensing machinery. The principles entering into the design of both surface and jet condensers are discussed and a report of two tests made showing the advantages of the countercurrent construction of the Wheeler rectangular jet condenser as affecting economy of operation and the attainment of high vacuum is included. This paper was published practically in full in *The Iron Age*, August 11, 1910.

Pressure Regulators.—Reynolds Gas Regulator Company, Anderson, Ind. Catalogue. Illustrations and descriptive matter explain the operation of the Reynolds gas regulators for controlling the pressure in artificial and natural gas distribution systems and also for keeping the pressure constant in the house service pipes connected with the system. The various types of regulators are discussed as well as the various distribution systems. Charts showing how these regulators keep the pressure constant and a partial list of users are appended.

Wrought Iron Pipe and Fittings.—Longmead Iron Company, Conshohocken, Pa. Folder. Lists the different sizes of standard and extra strong wrought iron pipe, standard wrought couplings and standard weight bundled pipe made by this company, and gives brief definitions of trade terms.

Electric Fixtures.—Pettingell-Andrews Company, Pearl street, Atlantic avenue and Purchase street, Boston, Mass. September number of *Juice*. The first of a series of special issues devoted to various departments of this company's business. This one is devoted to the fixture department and contains an illustrated article descriptive of the process of building electric fixtures, which covers all the different steps in the work and is illustrated by a number of views of the several departments. Another article dealing with fixture work describes an installation of the United Illuminating Company, New Haven, Conn., for which this company furnished the fixtures.

Pressure Controlling and Regulating Valves.—Ziermore Regulator Company, Johnsonburg, Pa. Nine circulars. Illustrate and describe various types of valves for controlling and regulating pressures made by this company, pressure controlling and regulating valves, stoker and force draft regulator, flexible-stem throttling valves, boiler feed pump regulator, double adjusting low-pressure regulator, water level regulator for steam boilers, fuel, gas and oil regulator for steam boilers, vacuum pump regulator, and a special type of regulator for elevators, fire pumps and paper mill digesters. Each of these circulars is uniform in character, an illustration of the valve or regulator being given on one inside page while brief specifications are given on the facing page.

High Pressure Blowers.—B. F. Sturtevant Company, Hyde Park, Mass. Catalogue No. 175, superseding No. 140. Size 6 x 9 in.; pages 43. Treats of the Sturtevant high pressure blowers for handling air where the pressure is between 1 oz. and 5 lb. per square inch. The most common uses of these blowers are for furnishing blast for cupolas, gas and oil burners, furnaces of all sorts, converters and forges. Among the special uses for which they are adapted are agitating water in filtration plants and tanning liquors or other fluids, forcing smoke or other gases through water to remove impurities, aerating milk, mine ventilation, blowing chips from lathes and for many other special manufacturing purposes. The blowers are illustrated, both assembled and in detail, and test curves and tables of dimensions are appended.

Electric Welders.—The Toledo Electric Welder Company, Knowlton and Langland streets, Cincinnati, Ohio. Booklet. Size 6 x 9 in.; pages 35. Illustrations and descriptive matter explain the operation of the Toledo electric welders for welding stock, both round and bar, and also plate and standard pipe. In addition to these machines others are made for making combination T and butt welds, riveting spokes in a small metal wheel, doing spot welding, welding automobile rims, welding the shanks and stems of twist drills together and for making wire racks. A number of sample welds made by these machines are illustrated and a brief description under the illustration of each machine is supplemented by a fuller account of what the machines do and how they do it.

Coal Handling and Mine Equipment and Conveying Machinery.—The Jeffrey Mfg. Company, Columbus, Ohio. Bulletin No. 42 and booklet No. 28. The former describes the coal handling and mine equipment machinery of this firm and contains illustrations reproduced from photographs of actual installations of the Jeffrey apparatus. The booklet suggests the company's methods of handling and treating stone, ore, sand, gravel, cement and other heavy and bulky material. There is little text in the booklet, the story being told by photographs of the different pieces of the apparatus and views of installations, the salient features of which are briefly given in the captions.

Tool Grinders and Ramming Machines.—The Tabor Mfg. Company, Eighteenth and Hamilton streets, Philadelphia, Pa. Catalogue and loose leaf circulars. The former deals with the Taylor universal tool grinder and includes a detailed description for forging and grinding Taylor standard shape cutting tools, with suggestions for the toolroom and the arrangement and description of the Taylor belt bench. The circulars pertain to the line of ramming machines made by this company and show the different styles of machines as well as typical castings made by them.

CURRENT METAL PRICES.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from store—

Refined Iron:

1 to 1¾ in. round and square	₩ lb 1.90¢
1½ to 4 in. x ⅜ to 1 in.	₩ lb 2.10¢
1½ to 4 in. x ⅛ to 5-16	₩ lb 2.10¢
Rods—⅜ and 11-16 round and square	₩ lb 2.10¢

Angles:	Cts ₩ lb
3 in. x ¼ in. and larger	2.10¢
3 in. x 5-16 in. and ⅛ in.	2.35¢
1½ to 2½ in. x ⅛ in.	2.20¢
1½ to 2½ in. x 5-16 in. and thicker	2.10¢
1 to 1¼ in. x 5-16 in.	2.20¢
1 to 1¼ x ⅛ in.	2.30¢
⅞ x ⅛ in.	2.40¢
¾ x ⅛ in.	2.50¢
⅝ x ⅛ in.	3.55¢
½ x 3-32 in.	4.85¢

Tees:	
1 in.	2.65¢
1¼ in.	2.45¢
1½ to 2½ x ¼ in.	2.15¢
1½ to 2½ x 5-16 in.	2.35¢
3 in. and larger	2.15¢
Beams	2.10¢
Channels, 3 in. and larger	2.40¢
Bands—1½ to 6 x 3-16 to No. 8	2.30¢
"Burden's Best" Iron, base price	3.15¢
Burden's "H. B. & S." Iron, base price	2.95¢
Norway Bars	3.60¢

Merchant Steel from Store—

	per lb
Bessemer Machinery	1.90¢
Toe Calk, Tire and Sleigh Shoe	2.50@3.00¢
Best Cast Steel, base price in small lots	7¢

Sheets from Store—

Black

	One Pass, C.R Soft Steel.	R. G. Cleaned.
No. 16	₩ lb 2.80¢	2.90¢
Nos. 18 to 21	₩ lb 2.85¢	3.00¢
Nos. 22 and 24	₩ lb 2.95¢	3.10¢
No. 26	₩ lb 3.00¢	3.20¢
No. 28	₩ lb 3.10¢	3.30¢

Russia, Planished, &c.

Genuine Russia, according to assortmen , ₩ lb 12 @14½

Patent Planished, W. Dewees Wood, ₩ lb A, 10¢; B, 9¢ net.

Galvanized.

Nos. 11 to 16	₩ lb 2.95¢
Nos. 22 to 24	₩ lb 3.30¢
No. 26	₩ lb 3.50¢
No. 28	₩ lb 3.85¢

No. 20 and lighter 36 inches wide, 25c higher.

Genuine Iron Sheets—

Galvanized.

Nos. 22 and 24	₩ lb 5.25¢
No. 26	₩ lb 6.25¢
No. 28	₩ lb 7.25¢

Corrugated Roofing—

2½ in. corrugated.	Painted	Galvd
No. 24	₩ 100 sq. ft. $3.85	4.80
No. 26	₩ 100 sq. ft. 2.95	4.00
No. 28	₩ 100 sq. ft. 3.00	3.75

Tin Plates—

American Charcoal Plates (per box.)

"A A A." Charcoal:	
IC, 14 x 20	$6.35
IX, 14 x 20	7.60
A. Charcoal:	
IC, 14 x 20	$5.40
IX, 14 x 20	6.50

American Coke Plates—Bessemer—

IC, 14 x 20 107 lb	$4.40
IX, 14 x 20	5.40

American Terne Plates—

IC, 20 x 28 with an 8 lb. coating	$8.50
IX, 20 x 28 with an 8 lb. coating	10.50

Seamless Brass Tubes—

List November 17 1908. Base price 18¢

Brass Tubes, Iron Pipe Sizes—

List November 13, 1908. Base price 18¢

Copper Tubes—

List November 13, 1908. Base price 21¢

Brazed Brass Tubes—

List August 1, 1908. 19½¢ ₩ lb

High Brass Rods—

List August 1, 1908. 14¼¢ ₩ lb

Roll and Sheet Brass—

List August 1, 1908. 14¼¢ ₩ lb

Brass Wire—

List August 1, 1908. 14¼¢ ₩ lb

Copper Wire—

Base Price. Carload lots mill 14 ¢

Copper Sheets—

Sheet Copper Hot Rolled, 16 oz (quantity lots) ₩ lb 8 ¢

Sheet Copper Cold Rolled, 1¢ ₩ lb advance over Hot Rolled.

Sheet Copper Polished 20 in. wide and under, 1¢ ₩ square foot.

Sheet Copper Polished over 20 in. wide, 2¢ ₩ square foot.

Planished Copper, 1¢ ₩ square foot more than Polished.

METALS—

Tin—

Straits Pig	₩ lb 36¾@37

Copper—

Lake Ingot	₩ lb 14½@15
Electrolytic	₩ lb 14¼@14½
Casting	₩ lb 14¼@14½

Spelter—

Western	₩ lb 6¼@6½

Zinc.

No 9, base, casks	₩ lb 6 ¢
Open	₩ lb 5¼

Lead.

American Pig	₩ lb 5 @5¼
Bar	₩ lb 6¼@6½

Solder.

½ & ½, guaranteed	₩ lb 22¼@23½
No. 1	₩ lb 20¼@21½
Refined	₩ lb 18 @19½

Prices of Solder indicated by private brand vary according to composition.

Antimony—

Cookson	₩ lb @10¢
Hallett's	@10¢
Other Brands	@9½¢

Bismuth—

Per. lb $2.00@$2.25

Aluminum—

No. 1 Aluminum (guaranteed over 99% pure), in ingots for remelting 34¢

Rods & Wire Base Price 31¢

Sheets Base Price 33¢

Old Metals.

Dealers' Purchasing Prices Paid in New York

	Cents
Copper, Heavy cut and crucible	₩ lb 10.75@11.00
Copper, Heavy and Wire	₩ lb 10.50@10.75
Copper, Light and Bottoms	₩ lb 9.50@9.75
Brass, Heavy	₩ lb 7.25@7.50
Brass, Light	₩ lb 6.75@6.00
Heavy Mechine Composit o	₩ lb 9.50@9.75
Clean Brass Turnings	₩ lb 7.00@7.25
Composition Turnings	₩ lb 8.25@8.50
Lead, Heavy	₩ lb @3.00
Lead, Tea	₩ lb @3.25
Zinc Scrap	₩ lb @3.75

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